Vol. XXV No. 6 JUNE, 1918 Price, 10 Cents

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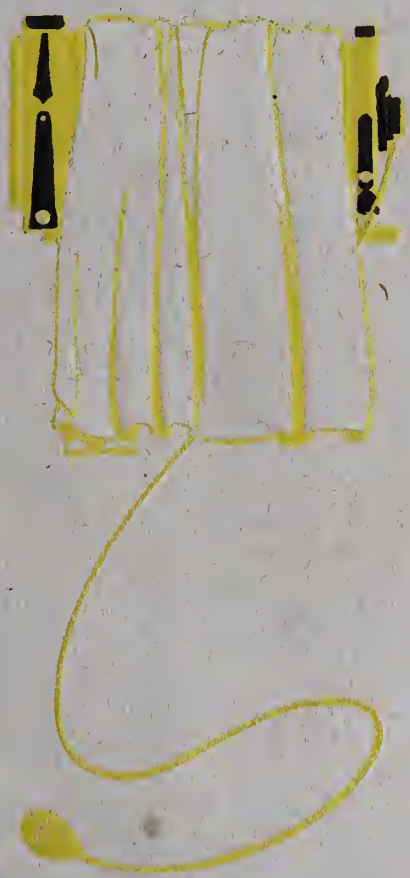

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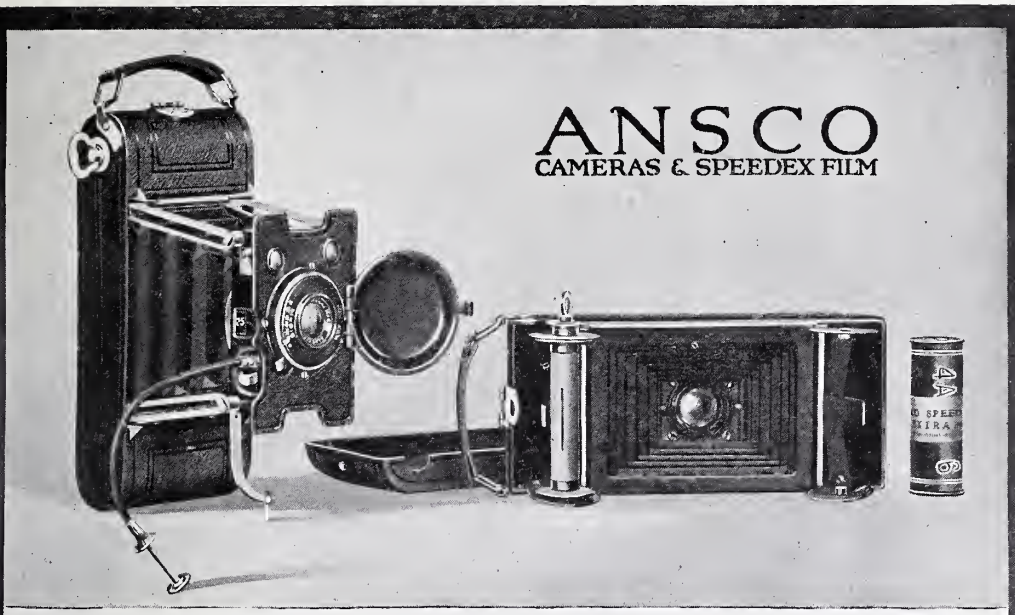

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3¼x5½	**Cooke Kodak Anastigmat**, 6¾- in. focus, f-6.3, in Compur shutter, new, list $43.50	now 30.00
3¼x5½	**Voigtlander Dynar**, 6½-in. focus, in cells, new, list $25.00	now 17.50
5 x7	**Monarch Wide Angle**, 5½-in. focus, f-16, in Regno shutter, new, list $14.50	now 10.00
5 x7	**B. & L. Zeiss Protar No. 7**, 6⅜-in. focus, f-6.3 in barrel, like new, list $67.00	now 45.00
5 x7	**B. & L. Tessar**, Series IC, 7¼-in. focus, f-4.5, in barrel, like new, list $58.50	now 48.00
5 x7	**Century Wide Angle**, f-16, in barrel, like new, list $7.50	now 4.50
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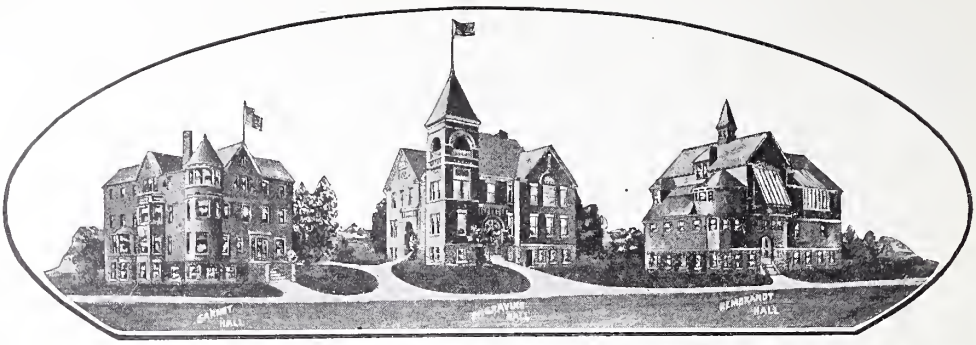

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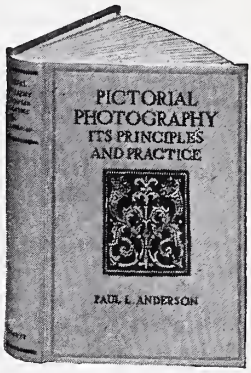

CONTENTS

Part I—Apparatus
The Camera
The Lens
The Plate
Exposure and Development
Miscellaneous Apparatus

Part II—Negative Modifications
Manipulation of Negatives
Enlarging

Part III—Printing Methods
The Ideal Medium
Discussion of Various Mediums
Technique of Platinum
Technique of Carbon
Technique of Gum
Technique of Gum-Platinum
Technique of Oil and Bromoil and of Transferring
Technique of Photogravure

Part IV—Color
Desirability of Color in Photography
Technique of Color Photography

Part V—Miscellaneous
Photography by Artificial Light
Motion Picture Photography
Conclusion

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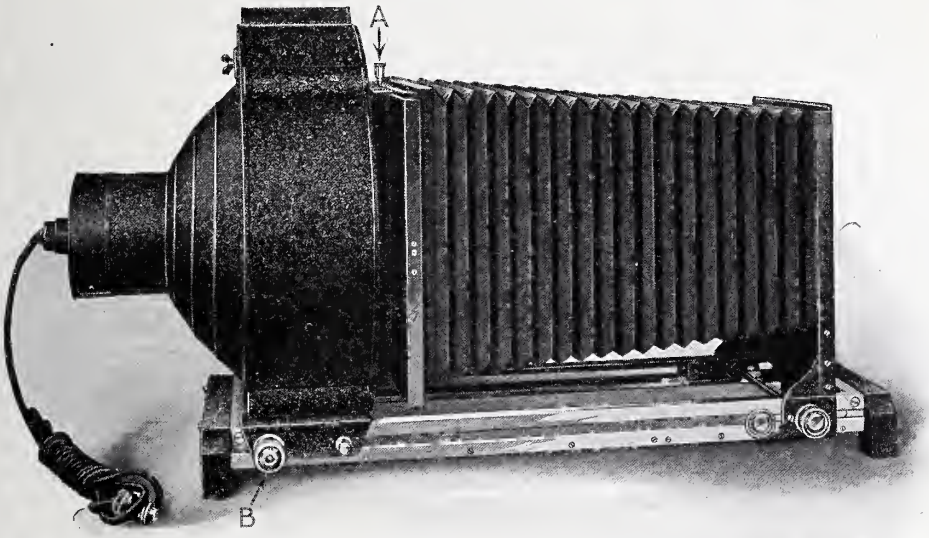

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A Photographic Monthly

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CONTENTS FOR JUNE, 1918

The Liberty Loan (Frontispiece) ..... By R. B. Marsh
Home Portraiture ..... S. A. Schwartz 215
A Simple Retouching Easel ..... C. A. Harris 220
An Excellent Stereo Equipment ..... John B. Gale 221
Suggestions for the Receptionist ..... William Westman 223
A Portable Dark-Room ..... Russell J. Waldo 227
Cutting Oval Masks ..... Charles A. Harris 229
Hypo-Alum Toning of Developing Papers ..... Frank B. Gerrens 233
Honeymoon Days ..... Kin Hubbard 235
Paragraphs Photographic 236
Speeding Up Enlarging—Dissolving Mercuric Bichloride.
Editorials 237
How We Can Help—Lend a Hand.
A Photographic Digest 239
Covering Power and Illuminating Power of Lenses—Truth of Tone in Photography—Viewing Pictures Monocularly—High Temperature Development—The Influence of Illumination on Color in Autochromes.
The Amateur and His Troubles 247
Photographing Furniture—Obsolete Diaphragm Markings—Exposures in Enlarging—White Carbon Tissue.
International Photographic Association 249
Club News and Notes 250
Our Book Shelves 251
Notes and Comment 252

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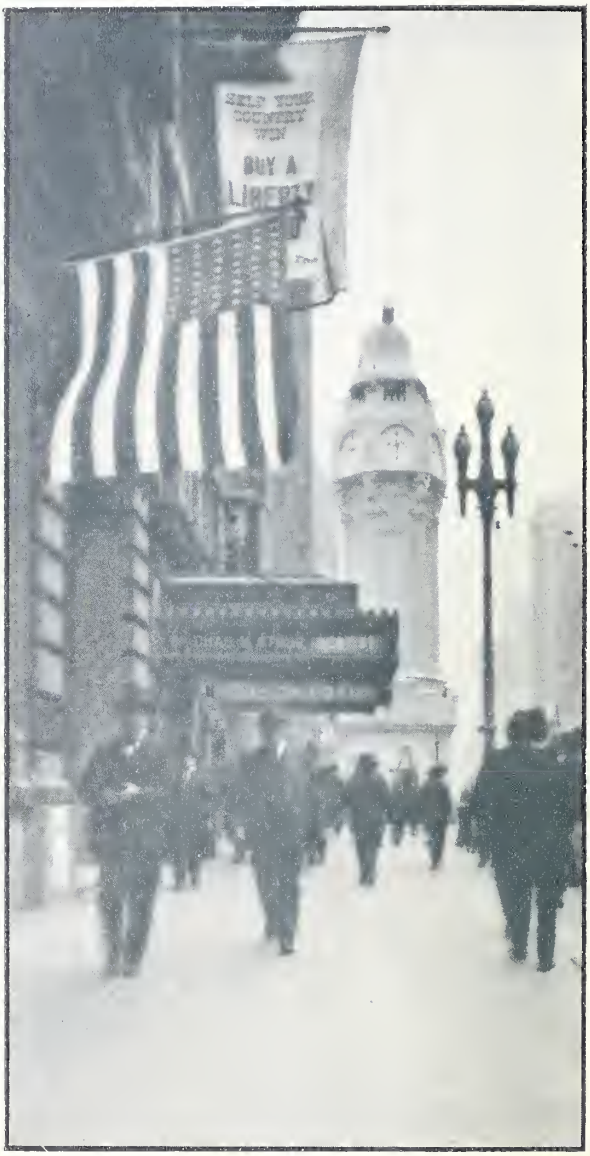


THE LIBERTY LOAN
By R. B. MARSH

CAMERA CRAFT

A PHOTOGRAPHIC MONTHLY

FAYETTE J. CLUTE, Editor

CLAUS SPRECKELS BLDG. SAN FRANCISCO CALIFORNIA

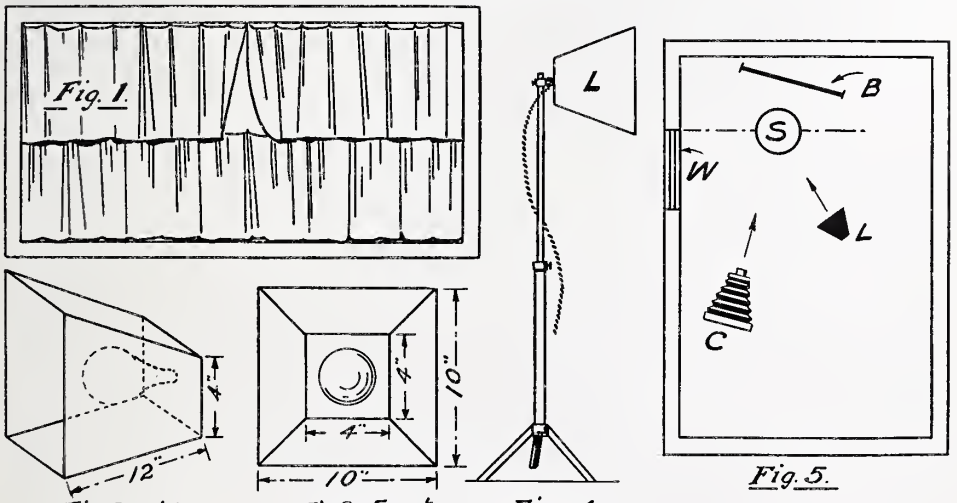
VOL. XXV JUNE, 1918 No. 6

Home Portraiture

By S. A. Schwartz, A. M. C. E.

With Illustrations by the Author

A field in photography which has received little attention from the amateur, but which when mastered will give the most satisfactory and gratifying results, is indoor or home portraiture. Unfortunately a few attempts, with little or no success crowning his efforts, will discourage the average amateur to such a degree that he will, in the majority of cases, give up all hope of ever succeeding,



WINDOW SHADE, SPOT-LIGHT, AND ARRANGEMENT FOR PLAIN PORTRAIT LIGHTING —In the last, S is Sitter; W, Window; S L, Spot-Light; C, Camera, and B, Background

and make no further attempts. As a matter of fact, the making of portraits at home is by no means a difficult task if the operator, professional or amateur, will remember the old hackneyed and threadbare expression, "Festina lente",—make haste slowly.

JUST A BOY—Graflex plate, Verito lens, window and one spot-light, one and one-half seconds exposure. No retouching

Proceed with caution, pay attention to every detail involved, and consider with utmost care each item which presents itself in the picture space. Composition, grouping and arrangement, in direct ratio with their importance, is the predominant feature of every portrait. I regret to say, however, that is rarely given any serious consideration and is often completely neglected.

The materials needed are few and can readily be made at home, and their acquisition will not involve any heavy financial expenditures. A 5x7 camera with a bellows extension of about thirty inches will probably be found most useful. The choice of the lens is a matter of prime importance, and this, of course, depends entirely upon the amateur and to what extent financially he wishes to take the matter up. In my own work, I am employing rectilinear, as well as anastigmat lenses, with a recent additional acquisition of two Verito diffused focus lenses, having a covering capacity of 5x7 and 8x10, respectively. The latter I use for the making of very large heads on a 6½x8½ plate. A shaded or graduated background, a window shade (Figure 1), and two one hundred Watt nitrogen bulbs for auxiliary illumination (Figure 2), will about complete the list of accessories required.

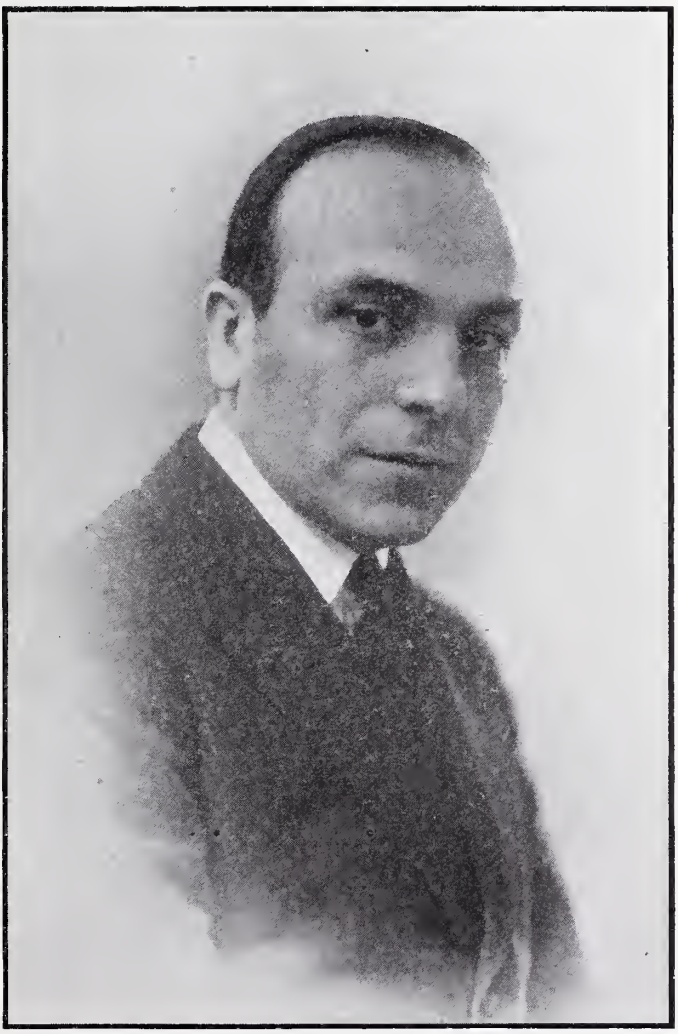
Figure 1 is a wooden frame made of such a width that it will fit snugly into the frame of the window. This is fitted with two sets of curtains, preferably made of some white material, arranged so as to slide back and forth on a wire, as shown.

The reflectors used in connection with the electric bulbs previously men-

tioned, are also home-made accessories constructed from an old soap box, as per Figures 2, 3 and 4. In order to increase the illuminating power, the inside of these are given two coats of "inside white", followed by two coats of white enamel. A handy way to support these reflectors, and at the same time be able to use them in almost any position, is by means of an old music stand, which may be readily adjusted to almost any position. (See Figure 4).

Although ordinarily a room with a northern exposure is to be preferred for portraits amid home surroundings, yet with the auxiliary illuminant almost any room may be rendered available for work of this nature.

For experimental purposes, select the best lighted room and one or two good subjects. Let your sitters assume a natural easy, careless position in that portion of the room which best lends itself to your purpose. Illuminate one side of the face with the light coming from a window, properly controlling this light by the judicious use of the small curtains. The shadow side of the face is to receive its light from the reflector, which may be either a white sheet, or the auxiliary illuminating device referred to previously and shown as L in the several diagrams herewith.



PORTRAIT—Cramer plate, Verito soft-focus lens, two seconds exposure. Slightly retouched

In order to minimize the exposure, keep your diaphragm as wide open as conditions will permit, without of course sacrificing any of the important details; especially such details as tend to emphasize that the sitting is not one of the conventional studio portraits. In other words, one not taken in studio light with studio surroundings and under studio

conditions, but one which brings to the attention those salient features of real portraiture which have contributed so vastly towards the popularity of home portraiture.

In order to vary the intensity of the light, and thus control the gradation of tone on the subject, a frame covered with from one to three thicknesses of tracing cloth, or some similar substance may be placed before the reflector. This, of course, is not absolutely essential, as a similar result may be produced by either increasing or decreasing the distance of the spot light reflector from the sitter.

To avoid tiring your sitters, do not, during your preliminary work, have them sit in a strained or uncomfortable position, especially so if your subjects are children or people who are inclined to be somewhat nervous. Talk to them, or keep their minds otherwise occupied, being on the lookout at all times for a favorable pose or expression. The secret of home portraiture success lies in photographing the people among their home surroundings in a natural way, and not as they would be at a party or at a studio.

Before making your exposure, shield your lens by using some kind of home-made hood for the purpose, give your subject a general survey and see that the minor details harmonize. Make two negatives of the same sitting and developing them one at a time, using the first plate as a guide in developing the second.

Plain portrait lighting, probably the most popular, requires that the subject be placed in a postion far enough away from the window, so that the rays of light will fall upon the sitter from an angle of about forty-five degrees, so as to secure perfect atmosphere and a great amount of roundness. This is most easily accomplished by having the sitter at a distance from the window equal to the width of the window sash. Should the shadow side of the subject, under these conditions appear too dark, these shadows may readily be brightened and rendered more transparent by the aid of the reflector or the auxiliary illuminant. The general arrangement of the sitter, camera, background, as well as the reflector or spot-light may readily be seen in diagram, Figure 5.

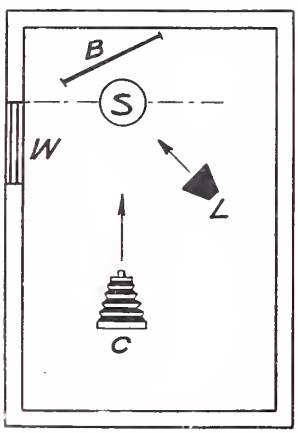


Fig 6.

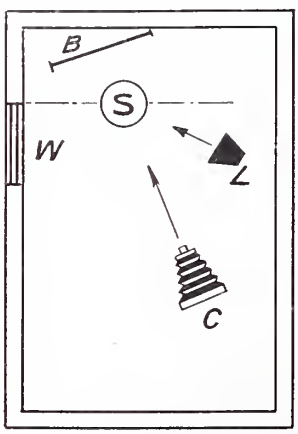


Fig 7.

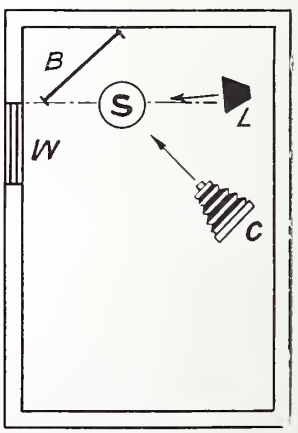


Fig 8.

ARRANGEMENT FOR REMBRANDT LIGHTINGS—S, Sitter; W, Window; S L, Spot-Light; C, Camera, and B, Background

TWO PORTRAITS—Graflex plates, Verito soft-focus lens, light from window and two spot-lights, one and one-half seconds exposure. No retouching

In Rembrandt lighting, as opposed to the previously discussed method of lighting the greater portion of the face, is in shadow, and the high-lights are strongly defined. The sitter is placed in practically the same position, the camera, however, is moved further from the light. In making portraits of this type, care should be exercised that the transition from high-lights to the deepest shadows shall not be void of all atmosphere and transparency.

There are three distinct lightings of Rembrandt character, as follows: Full or nearly full face, with illumination from the side; two-thirds side view with the sitter turned more or less towards the source of light; and, full profile, with almost the entire face in shadow, only the outline receiving a strong light. This last style is also known as "line lighting". Each of these three effects may readily be obtained by a slight variation in the position of the camera, as well as the reflector or spot-light. (See Figures 6, 7 and 8.)

Great care has to be exercised in the finishing of a portrait, as that is really the element by which the worker's ability as a photographer, be he amateur or professional, is judged. Some of the finest portraits, from an artistic point of view, have been hopelessly spoiled, and in that way made the topic of rather harsh, and in many cases, unjust criticism, simply because the negative was retouched too far, the wrong selection made in the choice of the printing medium, or something of the kind.

It is an easy matter to destroy the character in the face, making it an absolutely expressionless mass, by over-retouching it. I would therefore not consider it advisable for any amateur to do any retouching at all, unless he has had

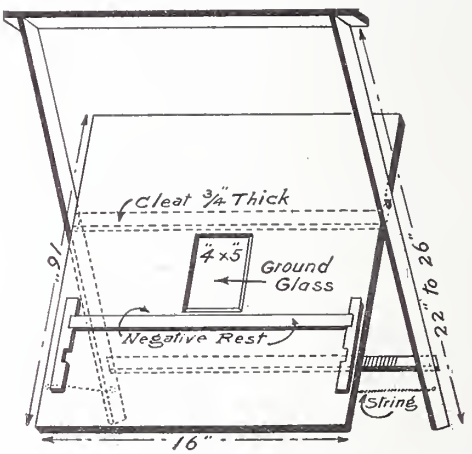
a great deal of experience in the work. Let him remember, however, that some of our rough grades of paper of the professional type adapt themselves excellently to negatives which, on smooth paper, would only yield fair results after a considerable amount of doctoring.

In conclusion, let me state that although no mention has been made in the foregoing paragraphs of negatives smaller than 5x7, this by no means excludes the owner of such an instrument from the field of home portraiture. I have seen excellent portraits, negatives made with a vest pocket camera, portraits which, when enlarged to 5x7 or even a greater size, lost none of their fine qualities.

A Simple Retouching Easel

By C. A. Harris

So much in the way of utility and convenience is comprised in the simple form of retouching desk or stand which is illustrated in the drawing presented, that every serious worker may be excused in his determination to have something of the sort. No doubt many are deterred from attempting the use of pencil and etching knife because of the skill and practice thought to be necessary for perfection in all-round work, but elementary forms of retouching may be readily acquired and a simple treatment of the negative is often sufficient to produce improvements in the resulting print. One learns in this way how best to handle defective negatives; to eliminate pin holes, scratches and blemishes of all kinds and shapes; and sometimes certain lines of a picture can in this way be accentuated or subdued. For example, suppose the motive of the picture is a leafy path through the dim forest, but the path itself is rather obscure. This can quite readily be lightened by using the pencil, as fine detail is not necessary and the operation would not demand unusual qualifications. However, for any and all kinds of work on the negative, some form of desk or stand becomes a factor. It may be used on a small table in front of a window, and is equally good at night with a light placed directly behind the groundglass and a sheet of white cardboard arranged at an angle to reflect the light. The board is made of ordinary boxwood, three-eighths or a half inch thick. Select two pieces of the tongue-and-groove variety, so as to be light-tight and of the dimensions given.



The groundglass should be fitted into a rebate cut in the center of the board so as to be flush with the surface of the latter. Mark out and cut the opening

for this 4x5 sheet of groundglass before cleating together. A substantial cleat across the back just above the working aperture provides for the screws at either end upon which the frame part turns. If the above mentioned cleat does not seem sufficient, others can be added top and bottom, preferably on the back. The strips which form the supporting frame can be made of the same material used for the board. The slant is regulated by the length of string used and may be adjusted for light and convenience. When in use a cloth is arranged to cover top and sides. Any cloth—a focusing cloth if at hand, or in case of emergency one's jacket may serve almost as well.

Any light excepting that which comes through the negative, even a nail hole or reflection, is somewhat distracting, so it will be well to paint the side towards the operator a mat black. With reference to the use of dead black, paint composed of lamp black, shellac, etc., it has been my experience that it either rubs off on the hand or soon becomes shiny, if subject to much handling. Recently I tried for this purpose one of the wood stains, Johnson's is good, and find it well adapted for producing a mat black upon soft wood without the drawbacks mentioned. Of course, the jet black stain should be selected. The stain or dye sinks into the fibre of the wood, while any kind of paint is applied to and mostly remains a coating on the surface, liable to rub shiny in the course of time. If only a very small amount is needed, say for blackening camera parts, and the stain is not on hand, a black water color can be made to serve this purpose quite satisfactorily by applying several coats.

An Excellent Stereo Equipment

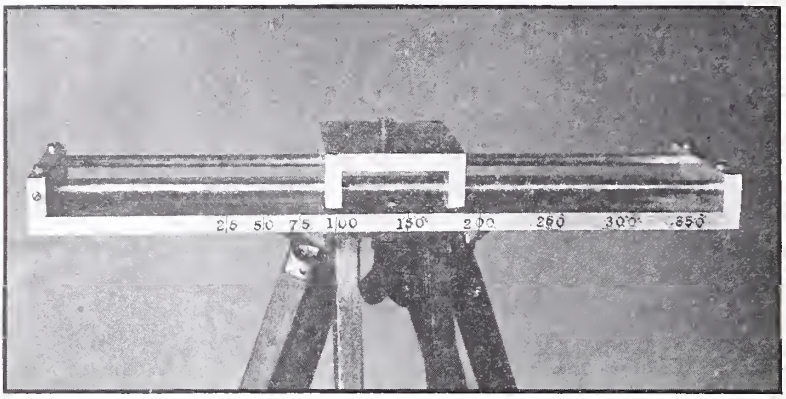
By John B. Gale

With Illustrations by the Author

In the March issue I gave a description of a slide device, fitting on the tripod head, that I had found both handy and efficient in the production of stereograms of inanimate subjects, using an ordinary 3¼x4¼ camera in making the two separate exposures required for the complete stereoscopic picture. This simple piece of apparatus was found so well suited to the work that I have recently constructed a new one that is not only better finished, but has a wider range of capabilities through being somewhat longer, the length over all being ten inches, thereby allowing a separation between the two positions of the lens of seven and one-half inches, when required.

The figures on the edge of the slide show the distance in feet at which the farthest object will show the best stereoscopic effect when the camera is moved, to bring the right hand edge of the slide directly over one of these numbers for the second exposure, after the first exposure has been made with the slide at the extreme left of the slide frame. The slide supporting the camera, as well

as the main frame work, is aluminum; the slide rods are made of German silver, in order to the better withstand wear, while the screws are of brass. And



right here let me caution against the use of rivets. I tried them, but found the aluminum is so soft that the rivets will not hold. Almost anyone can, if he is not properly equipped himself, find some friend who is in a position to put together this simple piece of apparatus. And I can assure those who will add it to their equipment that they will find a constanct source of gratification and enjoyment in its capabilities in the way of producing, with an ordinary camera,

the most satisfactory stereoscopic pictures of any subjects that do not embody movement sufficient to prevent two exposures being made.

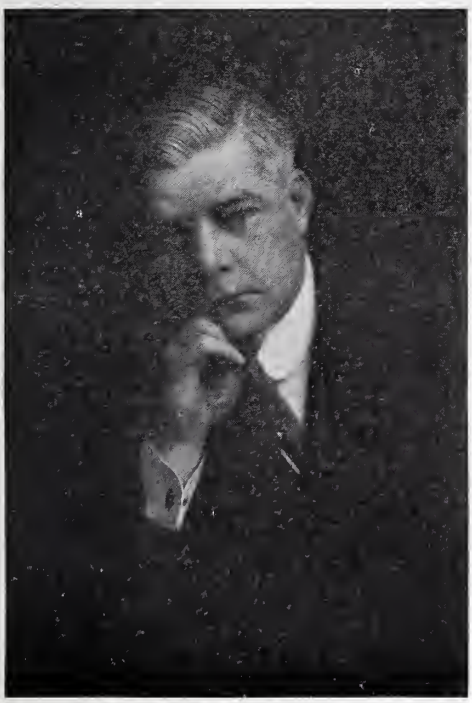
The illustration herewith shows the construction very clearly; and as can be seen, the marks with their corresponding figures are so arranged that the first four are half an inch apart, while the remainder are placed at intervals of one inch. With the camera at the extreme left of the frame, as one looks at it from the back of the camera, there is an allowable shift of seven and one-half inches to the other end where the right side edge of the slide comes immediately over the number showing the proper position for objects situated at a distance of three hundred and fifty feet, or more. The other numbers indicate the slide positions for their respective distances in the same manner.

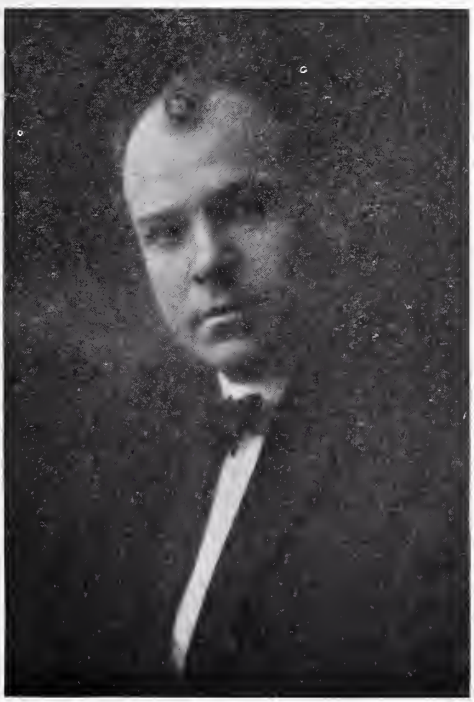
Suggestions for the Receptionist

By William Westman

With Illustrations by the Author

The receptionist should always bear in mind that her least tone or action has its effect upon the customer, who, coming in as a stranger, is particularly susceptible to suggestions. If she has to fumble about and pull over piles of samples in order to find the one desired, the impression is that visitors are few and far between, and the few that do come in do not cause so much trouble in being waited upon. The samples most frequently shown should be nearest at hand, and all of them so arranged that any one wanted can be at once located. She should remember that, despite the fact that these samples have passed before her own eyes a great number of times, they are, no doubt, quite new to the particular customer in hand, and she, the receptionist, must put enthusiasm for them into her talk and actions. And above all things, the samples must not be allowed to become soiled, and, of course, they should not be tossed about as if they were something of no value. The customer is not to be blamed for taking a low estimation of the value of the pictures if the suggestion is made by the ill treatment of them by the people who are responsible for their production.





PORTRAITS OF MEN ARE NOT DIFFICULT

Learn to handle the samples carefully with the fingers just engaging the edges, much as you would a very sensitive emulsion coated plate.

Except when the customer states, right on the start, the amount she wants to pay, one should bring forward something that is just a little better than the usual run of work, following this up with something just a little better still, taking care that she can clearly explain why this last is better. Showing the most expensive styles first leads to an awkward position if a customer should ask if something better is not available, as they frequently do. Even if the customer tells you just what price she wants to pay, and even if that be the price of a very good quality, a little better grade should be shown, but it should be put forward without any effort to influence the customer or belittle the amount she has mentioned as her limit of expenditure. If this is not done, the customer will sometimes find fault later and blame the studio for not having shown her these better goods, ones that are really more to her liking, even at the higher price. When this last happens, one has no good defense to offer, as it is hardly good policy to explain that one failed to show the better goods because the price was too high for the customer. When these better specimens are shown, it is well to bring forth something of a lower grade, as the comparison will be to the advantage of those first shown, not infrequently resulting in the selection of the better quality.

THE PRIDE OF THE FAMILY

Above all, never ask the customer, "About what

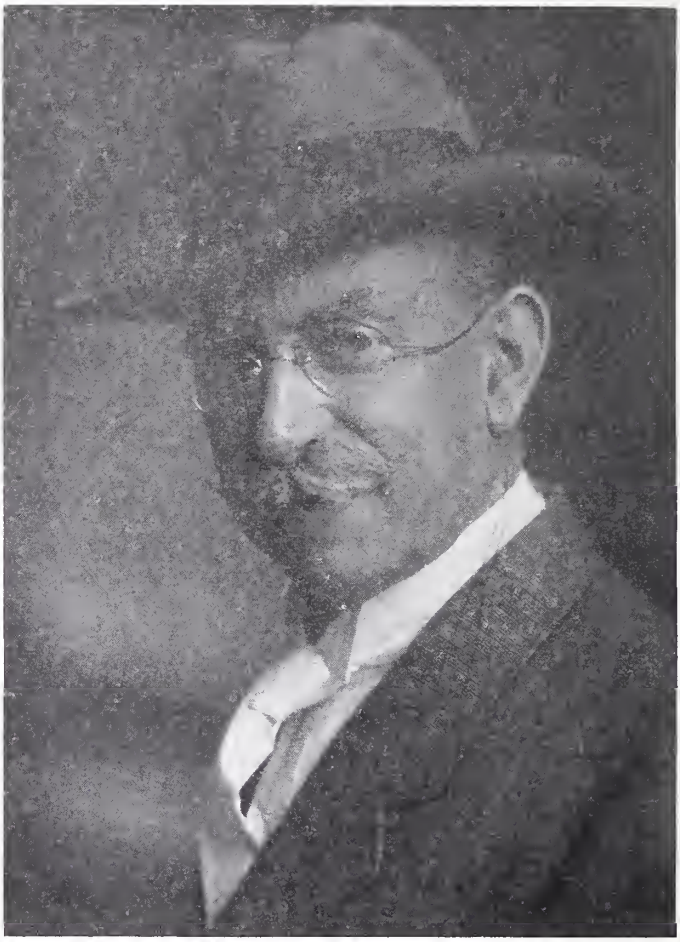
price?" It is unfair, to say the least, both to the customer and the goods you are trying to sell. The customer is rarely looking for pictures at a certain predetermined price. What she does desire is the largest possible amount of gratification of her individual taste in the matter of pictures at the price most nearly in accordance with such gratification. What she wants is value for her money, and that value is not expressed in square inches of surface, amount of embellishment in the way of a mount or folder, or any other tangible quality. It is a value varying with the customer, perhaps a value created in the customer's mind by having the difference between the several grades of work explained to her, preferably with a due consideration of her individual tastes in the matter. This last can generally be easily and quickly determined by observing how the first few samples are received. If the customer gives only a casual glance and shows no interest, at once put that sample aside and show something else, taking a hint from the lack of interest shown and avoid showing similar pictures.

A PORTRAIT OF A CHILD

Always arrange matters so that the pictures can be shown to the customer in a good light; and if conditions will permit, arranged so that the samples can be taken to one side and the customer made comfortable, much as one would seat a friend in a suitable chair and good light before giving him a portfolio of fine prints to enjoy. Asking the customer to stand at a counter or walk about from rack to cabinet savors too much of the grocery and the department store, and while talking to the customer, do not allow of any interruptions, do not allow your attention to be diverted. If you must answer the telephone or give some other matter your care, do it as quickly and quietly as you can, asking the customer to excuse you before going, and perhaps apologizing for the interruption as you return. Give the visitor, who is "just looking around" all the care and attention you can; and, no matter how trying the customer may be, keep your temper, keep pleasant. Frequently the visitor is fresh from some

store or other place where she has been treated in an overbearing way and, on coming to you, adopts an aggressive manner as a matter of defense. If not, if her trying manner is quite natural, she is to be pitied, and the receptionist has no excuse for allowing the customer's vexatious manner to influence her own.

And above all, do not talk too much and do not show too many samples or styles. Doing either of these things confuses the customer who may later be dissatisfied with her selection made under pressure of this kind. Let the customer do all the talking she will on the subject of pictures, to the end that her likes and dislikes may be disclosed. Watch closely and the number of samples that can have no possible interest for the particular customer in hand will be found to be surprisingly large. When a sample is shown simply to emphasize the good quality of a better or more desirable size, do not leave it about, but immediately it has served its purpose, put it aside and out of the way.



A CHARACTER STUDY PORTRAIT

And under no pressure of suggestion or appeal allow yourself to run down the work of another studio. The customer may appear to be influenced, for the moment, by such talk, but there is always a reaction that is unfavorable. There is, perhaps, no line in which it is less idle to make invidious comparisons. A portrait by the best photographer in a town may not suit the particular customer, as well as one made but a few days later by one whose average work is quite mediocre. The customer's taste may not be such as to assure an appreciation of the best work, and even if that is not the case, the customer may have been in a more propitious mood on one occasion than on the other. All that your particular studio can undertake to do is to make its best efforts towards pleasing every customer

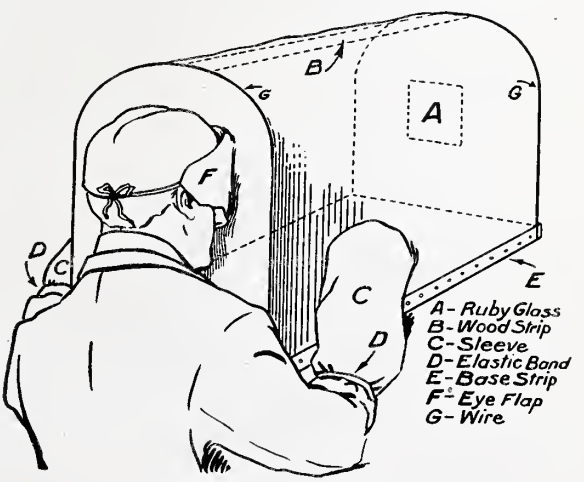
by giving of its best skill and its fullest application of the facilities at its disposal. If that skill and those facilities excel, the likelihood of the finished pictures doing the same is, of course, increased. But it is hardly advisable to emphasize even that point, except as it may be suggested in the behavior of the receptionist as her acquaintanceship with the customer unfolds.

It would hardly seem necessary to advise against showing styles that are no longer turned out, or mounts that are not stocked in sufficient quantity to fill the customer's orders, yet these last two errors are being committed every day. Know just what mounts are on hand and know exactly what style of pictures are adapted to them. Also know the price of every possible combination of mount, print and finish that is at all consistent. If a certain style of picture is wanted, and the studio is not prepared to turn it out, explain just why it is no longer offered and show the customer something that is better value and more pleasing for the same price. Never question the customer's taste by referring to something wanted as being out of style, no longer in demand, or anything like that. The better explanation is that the style wanted has been superseded by something that is better value as fitting in better with the regular output.

A Portable Dark-Room

By Russell J. Waldo

I take not a few pictures when away from home, away from any convenient place to do developing; and, quite naturally, some of these are such that it is very desirable, and I am sure of a good negative before leaving the locality. To make it possible to develop these negatives wherever I might happen to be, I devised a piece of apparatus that answers the purpose admirably, while still being both handy and portable in the extreme. It takes up practically no room in a trunk and by being made a little smaller, could be carried quite nicely in an ordinary suit case.



The bottom of this one I use is a piece of inch board, two and one-half feet long, and two feet wide. Half-inch stuff would answer, were it the kind that is made up of two layers with their grain crossing, or at an angle to each other. This base is fitted with a "prairie schooner" form of top by erecting at each end a stiff wire

frame or bridge, so arranged as to fold down flat on the board when not in use. This is easily achieved by having the ends of the wires bent at an angle and inserted through staples driven into the wooden base, of course taking the cloth cover with them. This last is made of a piece of heavy black dress lining, large enough to reach over the top and be tacked at each end to the under side of the board. Instead of driving the tacks in the cloth, place a strip of thin wood over the cloth and drive the tacks or thin brads through both, thus making a tighter joint. The edges of the strip are sewed to the two wire frames, care being taken that no holes be left for light to enter. It is best to fit and sew on the two end-pieces first, so that the edges of the top piece can be sewed to the wires in such a way as to make a nicely finished job. In one end-piece should be sewed a ruby glass about 4x5 in size, and in the other end fit a short hood, something after the style of those in a Graflex camera, provided with tapes to permit of its being fastened to the head. The two sleeves are made quite large and full to permit of the introduction of trays and solutions. In one sleeve the elastic bands used to hold it in contact with the arm is left separate for the same reason, the other being attached a few inches back from the free end. In use, I first adjust the sleeve having the free elastic band, and then push the other up onto the free arm working from the inside. A light strip of wood, just long enough to reach from the top of one wire bridge to the other, each end fitting into a little pocket made in the seam in the black cloth covering, holds the two wire frames apart and upright, completes the equipment. These pockets can be on the under side of the top so that the stick can be introduced from the inside after the sleeves and elastics are adjusted. This facilitates getting the sleeves and elastics in position by reason of the cloth cover being more slack than after the end frames are braced up solid by the stick.

A few strips of electrician's adhesive tape will help in making a light-tight joint around the edges of the ruby glass. A piece of wire bent to the proper shape will greatly simplify the making of a snug fit above the eyes for the hood, and a semi-circular piece of wire might be an improvement over the tapes used to hold the hood to the head, as no tying of the ends would be required. I regret that I cannot show a picture of the device, as it was taken along by a soldier friend leaving for France, and a new one has not yet been made.

The device can be used on any table with a lamp in front of the ruby light, or with that end facing a window. It can also be used for loading holders, and on more than one occasion I have used it to remove a jammed plate or film that would otherwise have been spoiled. Of course, this could not be done were the sleeves not large enough to permit of the entire camera being introduced.

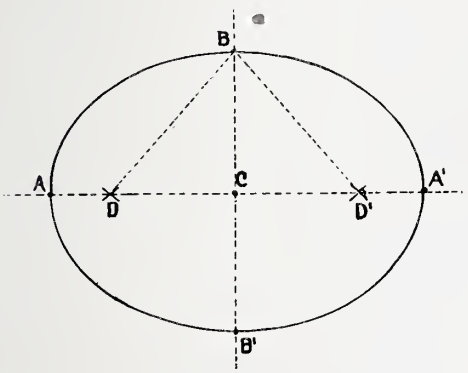
Choice in color corresponds to the degree of sensitiveness and education possessed by the eye. The barbarian and the infant seize only the most striking notes in the color-gamut. But as age, training, or civilization advances, the individual appreciates the semi-tones, the quarter notes, perhaps even the finer divisions of the chromatic scale.—*The Craftsman.*

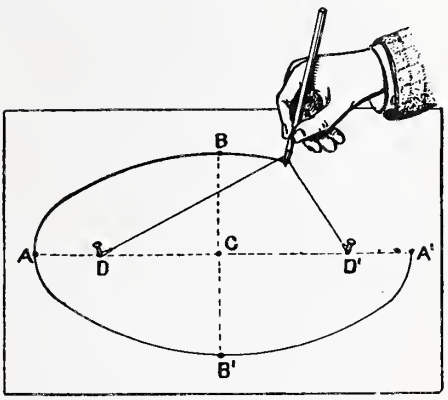
Cutting Oval Masks

By Charles A. Harris

At times most photographic workers have recourse to oval masks in the production of prints, or they desire oval mats for framing and other purposes. Although certain forms of the smaller sizes can be readily cut with a print trimmer and brass form, it is quite essential that one be able to produce these oval masks or mats having definite lengths and breadths not found in the stock sizes; or, if found, rather expensive in the larger sizes. So equipped one can provide the oval form required for each piece of work with the same facility, as in the case of the rectangular masks. Aside from the employment of an expensive machine, the easiest and best way to draw the oval, so far as I am aware, is practically as described, some years ago by F. H. Mann, of Washington, D. C., in connection with the two sketches herewith.

A A1 is the desired length of the oval, and B B1 the width; C is the exact center where the two lines connecting A and A1 and B and B1 cross. Using a pair of dividers, or the straight edge of a card, measure off the distance from A to C, or one-half the length of the oval. Setting one point of the dividers, or one mark on the edge of the card, as the case may be, at B, place the other point of the dividers, or the other mark on the card at that point, where it will just touch line A A1, this, of course, depending upon the proportionate width of the oval. Make a mark here, D in the sketch, and do the same, to



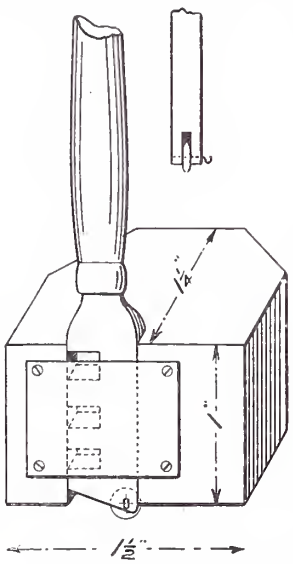


locate point D1 in the other end of the oval. Drive in pins at D, D1 and A1, and then tie a stout linen thread snugly around these three pins, one of the points at D1 being, of course, included within the loop. Remove the pin at A1 and insert the point of a sharp pencil in its place in the loop of thread. Slide your pencil around inside the thread, while keeping the latter taut by an outward pressure thereon, and it will cross B1, A and B, in turn, giving an oval the exact width and length desired. In the sketch the thread is shown with its

ends fastened to pins at D and D1, when in reality its ends should be tied together, forming a loop long enough to reach around the two pins and include the pencil point in any position on the oval outline, as it will if the directions are followed.

Now for the particular purposes mentioned above, it is not the outline alone that is wanted, but rather an oval mask. Cutting out the outline with knife or scissors is not always easy if one would secure perfection, unless indeed, one may be something of an expert with these implements. Using the scissors, small variations from the true line show quite plainly upon the print, and as for cutting the oval free hand with a knife, I have never attempted to do it, though I have seen the possibility of this method set forth in at least one article upon the subject. However, it will be found quite feasible for one to cut the oval with the same facility as described above for drawing the outline, by substituting in the operation a cutting wheel for the pencil.

By overhauling the available stocks of glass cutters, I found one, called the "Red Devil", in which the wheel revolved with a minimum of wabbling and side-play, and this I purchased, price ten cents, and later sharpened the wheel for paper-cutting purposes. This sharpening is best done by cutting a narrow slot or groove in a piece of wood, filling it with fine emery powder, and running the wheel back and forth therein. Now, if a small hook is devised that shall be located opposite the center of and as close to the wheel as possible, a hook through which the guide thread will run smoothly, one can, when used as described, make a clean cut just outside the thread in the same way as the pencil was used to draw the outline on the inner side. This hook is provided by drilling out the axle of the cutter as furnished and, in its place, fitting a new axle, cut from a longer piece of the same gauge wire, the extra length being bent up to form a hook or open eye projecting out as a continuation of the axle. The hook is just large enough for the required purposes, and made as close as possible to the side of the cutter. Use special care with reference to this fitting, as well as to driving the nails mentioned later, remembering that the business end of the cutter is made of cast iron and is easily broken.



Usually, for cutting glass, the instrument is held at an angle, but for this work an upright position is more convenient, and as the thread provides no support to assure a perfectly upright position of the cutter, as does a straight edge or ruler when cutting glass, a "holder" must be provided. Take a piece of inch wood and cut out a piece 1¼ x1½ inches, and in the longer side cut an upright recess that will just take the shank of the cutter in such a position that the cutting wheel, which is at the back thereof, will be located directly below and in the center of this one and one-half inch side of the block. The cutter shank should fit the recess snugly, the wheel projecting below the under

side of the block just sufficient to cut nicely when the latter lies practically flat on the material in which the oval is being cut. So adjusted, fasten the cutter securely in position in the block, as regards any possible up and down movement, by driving a couple of small nails through the openings or slots in the back of the shank. A small brass plate nailed across the front of the recess in the block will hold the cutter firmly in its place and completes this contrivance or block-like handle that insures the perpendicular position of the cutter. As the original handle serves no particular purpose, it might, if desired, be removed as a matter of added convenience.

THE HOMESTEAD By G. E. VALLEAU

As in this operation, there is apt to be more force applied than with the pencil, it will be well to replace the pins mentioned with wire nails, filing off the heads to permit removing and replacing the paper for mask. Also the thread must be such as to eliminate any stretching. If necessary, use a double thread, which will be sufficient, if a heavy linen variety is at hand. I use the thread preferably because it is flexible and smooth. Suppose now we see "how they come out", and proceed with results. Prepare first a smooth, flat board, and upon this place the paper for the mask. With rule and dividers, the oval form required is now indicated in the manner described, allowance being made in the measurements, of course, for the difference in position, the wire pins driven and thread prepared. Remove the sheet of paper carefully and place on the board a piece of zinc, somewhat larger than the oval to be cut, the upright nails protruding through holes made in the zinc. In place of round holes, slots can be cut in the zinc along a central line, and thus the same piece utilized for several sizes within such limits.

Lay some strips of cardboard, the thickness of the zinc, around the edges of the latter, to provide an even surface for the block while cutting. The paper is now replaced in the original position and being larger than the zinc, is thumb-tacked to the board at the four corners. Larger sizes will require a greater number for security.

The next step is to draw with a pencil the oval as prescribed and regulated by the thread just prepared, the purpose of which is as follows: While in operation, the cutter side of the block, which in effect is a straight line, must

follow the curve of the oval in such a manner as to form a line perpendicular to the arc. This is quite readily done with the penciled outline as a guide to follow. Another point to remember in order to avoid trouble is that the thread must operate parallel to the surface of the paper. Now the thread, where it engages the hook, is raised somewhat from the surface beneath, and is accordingly made parallel by placing a couple of buttons of proper thickness, and about a half inch in diameter on the two pins or nails, D and D1, before commencing the cutting operation. Because of their smooth surface, which is desirable, I use two ordinary bone buttons, with holes drilled through their centers, for this purpose. Now attach the cutter and adjust the knot of the thread so that it will be just behind the wheel or hook when the cutter is at A or the starting point. Holding the paper firmly with the fingers of the left hand and, making sure the thread is pressed down to the buttons at all times, proceed with the right hand to make the complete cut, gradually, in the operation, walking, or rather side-stepping around the small table which should be used in this connection. So doing, the same relative position is maintained from start to finish. The movement must be steady and continuous, and any sections not cut through, separated with the scissors afterwards. The tension on the thread should be uniform, but only sufficient to keep it taut. The principal pressure should be downward, so as to insure a good cut. With a little practice on waste paper, the necessary skill is acquired to produce practically a perfect oval mask and easier than our description might, perhaps, lead one to imagine.

The circular form of mask is, comparatively, simple in execution. The thread representing one-half the diameter, is attached at one end to a central pin, and at the other to the cutting wheel. The use of a thread not being essential, as with the oval form, it would undoubtedly be the better way to use instead a thin strip of wood fastening one end to the block carrying the cutter and at the proper distance from the wheel, a hole for the central pin. This would make the connection solid between the central pin and the wheel with no opportunity to waver from the true line.

For Photography Is An Exacting Master

As Michael Angelo said of art, so we may say of photography, the painting with the finger of light: "It is a jealous thing; it demands the whole and entire man." We may bring to it all we know, or can know, of physics, chemistry, astronomy, mechanics, geometry, and drawing, and still it will ask for more. But it also offers and gives, a goodly reward; and whoever has studied these things in the earnest prosecution of photography has found his knowledge of them corrected, deepened and enriched by the use of the camera, which is at once the most truthful recorder of the kaleidoscope changes of the visible and invisible phenomena of nature, and at the same time may be made the most obedient servant in the retinue of art.—William M. Murray.

Hypo-Alum Toning of Developing Papers

By Frank B. Gerrens

I have been asked to set down, for the benefit of other readers, my method of securing sepia tones by the hypo-alum toning process. There is really nothing new about the formula or method I use, both have been published and republished, both in the magazines and in the instruction manuals gotten out by the paper manufacturers, and yet quite a few seem to fail in getting good results. I believe the main trouble lies in their not using enough care in the matter of giving the print the correct exposure and no more or no less. One will find that if the exposure is right, the print will come up to about the right density in the developer and then seem to come to a stop. If the exposure is too long and the print develops too quickly, if it has to be rushed into the short stop or the fixing bath in order to keep it from going too far, the best hypo-alum bath will give a yellowish instead of a sepia tone. On the other hand, if the exposure is too short, so short that development has to be forced or prolonged in order to secure proper density, purple tones will be the result.

The hypo-alum bath for both hot and cold toning is made as follows: Dissolve one pound of hypo crystals in one gallon of water, heat to the boiling point and then add, slowly, four ounces of powdered alum. This boiling should be for at least three minutes, with constant stirring, a glass or wooden rod or paddle being used. When this solution is cold, another, made up by adding forty grains of silver nitrate and forty grains of common salt to an ounce of water, is to be added. This should be put into a bottle and allowed to stand for twenty-four hours when it is ready for use. If used hot, the desired temperature is best secured by using two enamaled iron trays, the inside one containing the toning bath, and the other or under one, plain water. The bath must not be allowed to become too hot and the tray should be kept covered as much as possible to avoid the loss of the sulphur given off. When the bath is cold and standing, there will be a white sediment at the bottom of the bottle, the liquid above being clear. When heated it will become milky and white looking. If not clear and white; that is, if not free from sediment at that time, add a little fresh stock solution. This last is made up just the same as the bath described above, except that the silver and salt solution is not added. As the bath is used, there is a constant accession of silver from the prints treated, so that there is no need of adding any more, once the bath works satisfactorily. This explains why some workers find their hypo-alum bath working better and better as it grows older. They started with it deficient in silver and did not secure good tones until enough silver had been abstracted from the prints passing through it.

After each toning one will find that a certain amount of the bath has been

abstracted in removing the prints, and this shortage should be made up by adding some of the new hypo-alum stock solution. This keeps the bath uniform and up to the amount required to nicely fill the tray without making too great an addition of new bath at one time. This also applies to the bath when used for cold toning.

This last or cold toning differs only from the hot method in that a much longer time is required, and it is not necessary to keep the prints in motion after they have been introduced and moved around a little to get good distribution of the solution over their surface. In the hot method the prints must be kept moving or uneven results will be obtained. The cold bath method also has the advantage of rarely if ever giving scum or other surface markings that have to be cleaned away. In cold toning the prints may be put in the bath in the morning and removed at the end of the day or they may be started in the evening and removed the next morning.

After one has acquired a little practice in handling the hot bath process, some quite pleasing effects can be obtained by bringing the bath to a degree of heat that will just slightly melt the gelatine of the emulsion carrying the image. This, however, is best suited to subjects in bold masses with deep shadows; but, done with care, so as to secure an even effect, the results have a very pleasing appearance of brilliancy that suggests a rich carbon print. But in ordinary work the bath should not be heated over one hundred and twenty degrees Fahrenheit. If the bath is too hot the prints will not tone, and in the above suggestion as to slightly melting the surface of the emulsion, it is understood that this is to be done by raising the temperature of the bath only after the prints have acquired their desired tone.

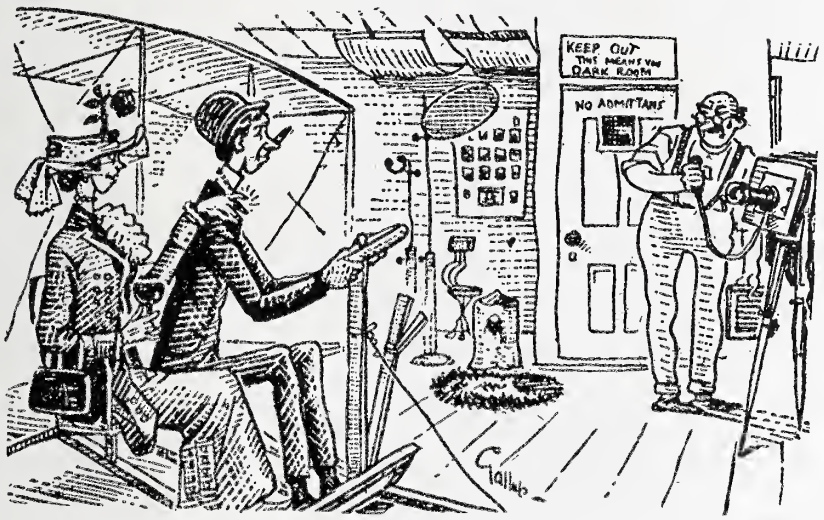
There is really nothing more that I can add except to urge the employment of care in giving the paper the right exposure, and the steady maintenance of the bath at a uniform strength by regular additions of the stock solution, rather than an occasional addition of a large amount. From time to time the old bath will require to be decanted off in order to get rid of the dirt that may settle to the bottom of the bottle or container. Always save the clear portion of the old bath in order that it may furnish the necessary silver for good results. I might, before closing, advise that even with a good bath and properly timed prints, good tones may not result. A hard, glassy negative will produce one sort of sepia tone; a muddy, fogged negative another, while the most pleasing sepia print is only obtainable from a good negative by correct timing of the print and the use of a well-ripened bath.

"Meanwhile, if these hours be dark, as indeed, in many ways they are, at least do not let us sit deedless, like fools and fine gentlemen, thinking the common toil not good enough for us, and beaten by the muddle; but rather let us work like good fellows, trying by some dim candlelight to set our workshop ready against tomorrow's daylight—that tomorrow, when the civilized world, no longer greedy, strifeful, and destructive, shall have a new art, a glorious art, made by the people and for the people, as a happiness to the maker and the user."—WILLIAM MORRIS.

Honeymoon Days

By Kin Hubbard

Weddin' couples are beginnin' t' return t' ther ole stampin' grounds—t' th' scenes o' ther engagement days, th' happiest days they'll ever know agin. They are tired an' grimy and disillusioned. Some have bathed in th' crystal waters o' Cedar Point, some have walked solemn-faced thro' th' historic precints o' George Washin'ton's ole home at Mt. Vernon, some have crawled thro' th' mud o'



"THEN COMES TH' PHOTO STUDIO AN' THEY GIT TOOK T'GETHER SETTIN' IN A DUMMY AIRPLANE, TH' GROOM WITH A SE-GAR IN HIS MOUTH AN' HIS HAT TILTED BACK"

Mammoth Cave, some have mingled in th' gayety o' Atlantic City, while some have returned sun-browned from th' croquet grounds of inland resorts.

A hot, sticky weddin' trip in midsummer must be a beautiful experience—all th' way t' Niagary Falls in a yeller day coach, half embedded in egg shells an' spillin' baked beans on th' red plush seats at ever' lurch o' th' train. A groom dressed in a tight fittin' black forced sale suit covered with cinders an' a big brown derby hat that won't hang anywhere an' a high one-ply La Verdad collar an' a unmanageable necktie. An' a bride pinned t'gether in a travelin' suit o' blue serge that turns red on th' shoulder next t' th' window an' a hat o' her own creation. They spend th' first day at th' Falls among th' souvenir pustal booths an' ice cream cone bazars. Then comes th' photo studio an' they git took t'gether settin' in a dummy aeroplane, th' groom with a se-gar in his mouth an' his hat tilted back. Th' bride places her left hand on his shoulder (ring showin') an' in her other hand she clutches a red goblet bearin' th' inscription, "From Cecil t' Myrt, Niagary Falls, 1917." How happy they are!—She can't

see th' Falls fer her new ring, while his breast swells with a feelin' o' security as he notices, hidden between two ones, a five that hasn't been broken.

Long before they strike th' state line on th' return trip th' groom falls int' a meditative state an' begins t' realize fer th' first time that he'll have t' be some contortionist t' make both ends meet on his weekly wage. He begins t' feel that he should have held off fer another year—till he had another suit o' clothes. He wonders if his bride is stocked up on clothes an' if her teeth are plugged. As he enumerates th' extra added features o' married life th' fear that he'll be reduced t' stogies seizes him an th' scenery along th' route loses its charm. Then th' ole happy past looms up—when he boarded at home fer nothin' an' didn' have anything on his mind but his hair an' a little dash o' violet water. How he used t' lean agin th' courthouse fence in th' evenin' an' smoke long, fragrant La Zaras till it wuz dark enough t' set on her verandy among th' sweet smellin' honeysuckles an' talk o' love. How he whistled "Sweet Marie" all th' way home, an' how his dear ole mother's voice called down t' him not t' strike matches on th' hall wall paper. How he crept int' his chamber an' put his tuberose buttonhole bouquet tenderly between th' well thumbed pages o' "Which Loved Him Best." Then he looks at his bride. She is fast asleep an' a half eaten wedge o' custard pie reposes among th' banana peels in her lap. Her little feet are cocked upon ther pasteboard suitcase an' a sweet smile lights up her girlish face. She is dreamin' o' th' future.

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It is just as allowable to investigate a work of art as it is to investigate a plant or an animal. There is no more need of discarding experience in the first case than in the second; the entire process consists in discovering, by numerous comparisons and progressive eliminations, traits common to all works of art, and, at the same time, distinctive traits, by which works of art are separated from other productions of the human intellect.—H. TAINE.

PARAGRAPHS PHOTOGRAPHIC

Kindly Contributed by Our Readers

SPEEDING UP ENLARGING: The lens stop in a Brownie enlarging box is about one-eighth of an inch in diameter. If this is drilled out and enlarged to three sixteenths, the speed will be doubled, and one will save half the time. The definition is positively as good; my own enlargements from anastigmat-lens-made negatives look like contact prints—L. M. R., Minnesota.

DISSOLVING MERCURIC BICHLORIDE: Bichloride of mercury is very hard to dissolve. Just fill your bottle half full of warm water, put in the mercury, shake vigorously, and the chemical will dissolve like sulphide, in about half a minute.—G. P. G., California.

CAMERA CRAFT

A PHOTOGRAPHIC MONTHLY

Vol. XXV San Francisco, California, June, 1918 No. 6

How We Can Help

The other day a visitor came in, one of the old-timers who had been a most ardent and enthusiastic amateur some years ago, who surprised me by announcing that he had again taken up camera work with more energy than ever before. The new developers, the different grades of developing paper, and matters of that kind were topics of interest, topics of the utmost importance to him. And all this revived enthusiasm is based on his desire to make his knowledge of photography serve the purpose of gladdening the hearts of the boys already "over there", on their way, or to go later; as well as those at home whose hearts are with them as they go. Our good friend resides in a town that has given most generously of its sons; and, while he has made no effort to lessen the patronage of the local professional, he has made hundreds of negatives and thousands of prints that have all been most acceptable to those to whom they were presented. The camera used is a small one, producing pictures that can be easily sent in a letter or carried in a card case, and these he finds are more acceptable than would be larger or more elaborate prints. And the pictures that his activity in getting about allows him to secure, are such that have a much more vital interest than do the more formal studio productions. What boy in the trenches would not be pleased with a picture of himself amidst his home surroundings, a picture that he could show to the others, as well as enjoy himself? And if it is too late for the making of such a picture, one showing the folks at home is equally effective. And one does not need to go far afield to find opportunities in this direction, and one need not fear that their efforts will not be appreciated, be the recipient of the kindness well able to afford a visit to the studio of the professional or less blessed with worldly goods to the extent of not feeling that this can be done. Our good friend of the camera has become known as the gentleman who wants to make little home pictures for the boys, any and all of them, who are doing their part, and he is loved and respected for his work. It takes up his time, it uses up material, but besides being work done in a good cause, it is interesting and enjoyable, as he never found the practice of photography before. There is an object, a good one; and, best of all, an object that others appreciate and understand. And still better, if I may be pardoned for suggesting so selfish an angle, many of the pictures that his activities encompass are artistic, and did he so desire, would no doubt rank high in any of the exhibitions. We can, practically all of us, do the same to a lesser or greater extent. The work is well worth the doing, the reward more than ample.

And having thus chosen our course without guile and with pure purpose, let us renew our trust in God, and go forward without fear and with manly hearts.—ABRAHAM LINCOLN.

Lend a Hand

What greater joy could there be, little children, than to lend a helping hand?

Noble thought! Looking into your bright, shining faces this Sunday morning, I can see that each of you has that thought, and your faces look brighter and shine better for it. A helping hand! By your eager look, Ethel, and by the smile on your face, Roy, I can see that each of you has made up her or his mind to always lend a helping hand.

Larry, stop that! No, you mustn't make remarks about teacher while he is trying to show you the way. That is not lending a helping hand to your teacher. Dear me, no! What's that? "Tie that bull outside!" Larry, I do not understand you.

But just think, little children, how in any walk of life you can lend a helping hand. Think, for instance, of the poor editor.

There's a thought for you—the poor editor! Some of you may grow up to be editors yourself some day and may need a helping hand. Ah! But how much more noble it would be if you should grow up to be contributors and then each of you could lend a helping hand to the poor editor. Do unto others as they would do unto you—and beat them to it!

The poor editor, little children, has a hard life. When you read your CAMERA CRAFT this afternoon, as you will, like good little children, you will observe that several of the articles therein are not as interesting and instructive as you might wish. This happens because there were not enough contributions on hand to permit the poor editor to make a good selection—yes, pick out articles that would just fill the space, dearies, I see you understand me.

Oh, pupils, imagine the helping hand you could lend if you were all contributors! The contributor, you know, writes out helpful suggestions, information gathered from experience, and sends them in, giving the poor editor plenty of material from which to make up the magazine. He makes it possible for him to fill up the magazine—and the poor editor appreciates this so much! Just think of the pleasure afforded him as he labors away, lightening his daily load with gleeful song.

Oh, little children, grow up to be contributors as fast as you can and help the poor editor!

In the plastic mythology of Greece stood revealed the power and the beauty of Zeus, and Apollo, and Athene; in the poetry of the Hebrews was manifest the spirit and the majesty of Jehovah; in the Byzantine and Gothic Cathedrals,—in the pictures of Madonnas and saints and warriors, was expressed the yearning of the Middle Ages and of the Renaissance for that expansion of nature and of human personality, which in another form we find in the lives of St. Francis and of St. Catherine, and in the deeds and characters of chivalry. The great art of those times, as of all times, was the direct expression of what was noblest and deepest in the lives of men and women who were then living and of their aspirations towards the infinite.—RALPH RADCLIFFE-WHITEHEAD.

A PHOTOGRAPHIC DIGEST

Edited by H. D'Arcy Power, M. D., Burlingame, California

Covering Power and Illuminating Power of Lenses

A recent article by Graham M. Nichol, on the covering power of lenses, raises some points with regard to lenses that are certainly not generally understood, though their practical importance is very great, and some of these points are well worth more detailed consideration. The first to demand special attention is the distinction between covering power and illuminating power. The best way to realize this is to take an ordinary 3¼x4¼ rapid rectilinear lens and fix it up temporarily on the front of a large camera, 10x12, if available. First of all, open the lens out to its biggest stop aperture, and secure approximately sharp focus on the screen on any object at a reasonable distance, say twenty feet away. Now remove the focusing screen and look obliquely through the lens. At a certain angle it will be seen that no light is transmitted at all, the two sides of the visible aperture apparently closing together and cutting out all light. Obviously this angle must mark the limits of the largest possible circle of light that the lens can project upon the plate. Next look through the center of the lens. A perfect disk of light is then seen, but as we move the head sideways this contracts to an ellipse. At a certain angle this perfect ellipse changes to an imperfect one, with pointed, instead of rounded ends; in fact, to the shape of the aperture formed by sliding two elliptical openings over one another, but not allowing them to coincide. This change in form is due to the lens mount interfering with the light. Up to this point we simply had an oblique view of a circle, which is an ellipse. We now have an oblique view of parts of two circles which apparently intersect, one being the circular stop aperture and the other the circular lens mount. The angle at which this change takes place is obviously the one limiting the illuminated disk which can be produced by light passing the full unobstructed stop-aperture of the lens, and this circle it is convenient to call the circle of full illumination, while the other may be called the extreme circle of illumination.

Suppose, now, we reduce the stop of the lens. It will be found, on trial, that the circle of full illumination has enlarged, though the extreme circle has not changed. If, however, we change the rapid rectilinear for a lens of unsymmetrical construction, the extreme circle will also change: it will become smaller as the circle of full illumination becomes larger if we use the type of lens called the single landscape. What happens to the extreme circle is, however, of small moment, for in any case the illumination near its boundary is so faint as to be photographically of no value. In fact, it is almost impossible to record its limits.

As the ellipse shown by a circle viewed obliquely is necessarily of smaller area than the circle itself, it follows that at the margin of the circle of full illumination the light is rather less than it is at the center. The diminution is not much, and as the ordinary plate has considerable latitude, it is not beyond its capacity to render this really graduated disk as if it were a uniform one. If, however, we go outside the circle of full illumination the visible aperture is very rapidly and materially cut down by the lens mount, and sooner or later we reach an angle where the production of a uniform disk on the plate is impossible. The limits of this angle depend a good deal on the plate and on the exposure, for a plate with great latitude will permit considerable over-exposure in the center without showing it. Under-exposure on any kind of plate will show a very small uniform disk, but if that plate will permit a considerable increase without spoiling the center of the image, a larger disk of uniformity can be produced. Leaving out the question of plate and exposure makes it difficult, if not impossible, to define the

limits of the angle, but seeing that many plates will permit a doubling of what is really a correct exposure, without showing over-exposure, it is convenient to define the circle of uniform illumination as limited by the angle at which the pointed ellipse representing the lens aperture is half the area of the complete circle seen centrally. This angle is termed the angle of semi-illumination, but it should be understood that the definition is a more or less conventional one, probably not far from the truth in most circumstances, but almost certainly well away from it in others.

An actual test giving varied exposures is the only way of arriving at the true maximum limits, and if we start with a very short exposure such a test will be very interesting and instructive, though somewhat expensive. The facts can be illustrated in cheaper fashion by using bromide paper, but the result will afford no criterion of the effects producible on a well-coated negative plate, as the bromide paper has no latitude at all in comparison. It should be observed that with nearly all large-aperture lenses the circle of full illumination is very small; with many not much bigger than half a crown. The most rapid and highest class anastigmats will produce much the bigger circles, but in practically all cases we use plates that require still bigger circles to cover them, so the practical limits are always outside that of the circle of full illumination and near that of semi-illumination. This circle also enlarges as the stop is reduced, and not uncommonly we are compelled to stop down to get sufficiently uniform illumination over the plate in use.

It will be noticed that in considering this matter of illumination, as it affects the area of a plate, we are almost obliged to bring in the word "cover", for none other seems to serve. The term "covering power" may be used in this connection, but it is best not so to use it, for in lens catalogues usually this expression does not imply the size of the angle or circle that the lens will cover with uniform illumination, but that which it will cover with good definition, a different matter altogether, and one quite unconnected with the other. Unfortunately, this conventional definition is not always observed, and so confusion has arisen. Some very good lenses have very small covering power compared with their power of illuminating a plate uniformly, and this may be no disadvantage, but it would be a somewhat awkward matter for a dealer to explain to a purchaser whose knowledge of lenses was very limited, and the former could hardly be blamed if in such case he used "covering power" to define the circle of good illumination. An example of such a lens is the Petzval Portrait, which, tested on a plane object, will show very small covering power, but on a suitably curved object will show it to a very considerable extent. The fact is we cannot fairly test all lenses for covering power in the same way. The form of the object surface comes in. An anastigmat or rectilinear may, with more justice, be tested on a plane surface, and the former will have little to recommend it if it does not show a fairly larger circle, bigger than the rapid rectilinear can produce in the same conditions and much bigger than that which a Petzval may show. But always the type of lens and the purpose for which it is required must be considered. Just as the size of the circles of full and semi-illumination increase as the stop is reduced, so also should the circle of good definition, if the lens is at all a reasonably good one. The most serviceable lens is one that with a moderately small stop will cover the plate with both even illumination and good definition, and one of the most important differences between good anastigmats and rapid rectilinears is that the former will do this with much the larger stop, the result being that, as a rule, they require only a half or one-third the exposure. This brings me to another of the points referred to by Mr. Nicol. He mentioned several cases in which rapid rectilinears would serve just as well as anastigmats, and several ways in which photographers could waste money on expensive lenses when cheap ones would have done all they required. The fact seems to be that many photographers do not quite understand what is meant by a high degree of correction in a lens, and place a value on it that their requirements do not justify. First of all, we must premise that no lens is perfectly corrected. If we test two lenses, an rapid rectilinear and an anastigmat, at a certain moderately oblique angle, and use a critical test, we shall find astigmatism in both of them. It may be clearly obvious in the first lens

and only just perceptible in the other, but it will exist. Clearly the anastigmat is the better corrected, but still not theoretically perfect. Next test both lenses by exposure on a test subject. The chances are that the aberration is not visible in either. The small defect that our microscopic test revealed is marked by the inherent defects of the photographic process. A minute spreading of the light-effect, or lack of sufficient resolving power in the plate, or perhaps lack of minute detail in the subject, has rendered the lens defects quite invisible, and, therefore negligible. It is then evident that the rapid rectilinear is doing the work quite as well as the photographer can desire, while the anastigmat is merely an instrument of greater precision than he needs. At bigger angles he will find marked differences, while always the anastigmat should be the quicker lens, but if he does not use wide angles or short exposures he can do without the anastigmat quite easily.

Yet another point is that the special advantages of the anastigmat are often arrived at by various means of compromises. A little of the critical definition possible in the center of the field is given up for the sake of getting something more important. It has been said that for fine central definition no lens yet made comes up to the Petzval Portrait, while it is certainly a fact that some good rapid rectilinears will give central definition of a kind that should satisfy the most critical photographer. Somehow or another, when an extremely fine focus is required, even though on only quite a small area in the center of the field, the tendency seems to be to rush for an anastigmat, when all the time a much cheaper lens would do the work just as well and very possibly even better.—C. Welborne Piper in *British Journal of Photography.*

Truth of Tone in Photography

A little consideration will show us that in the case of the great majority of subjects with which the camera has to deal (practically all, except copies) it is perfectly impossible for the photograph to reproduce the light and shade as the eye sees it. We have, at least, the consolation that this is equally impossible in painting or drawing.

Let us consider for a moment some typical case. In a good bright print, the highest light which is possible is the plain white of the paper as seen in the diffused light in which the picture is viewed; while the deepest dark will be the "solid black" given by the printing paper in use, as seen in the same light. To get anything darker than this, we should have to cut off some of the light by which we see the picture; and this would not only darken the shadows, but it would also have the effect of making all the high-lights darker too.

Now, if we are taking an indoor portrait, it is possible our sitter may have some part of her dress at least as light as the white paper of the print; and this may be seen in as strong a light as we should use to look at the print. But at the same time there will be other parts of the dress which are as dark as the darkest parts of the print, but which, owing to the fact that the sitter is solid and not merely a flat plane like a picture, will not only be dark in color, but will also be in actual shadow.

A black object which is in shadow is, of course, very much darker than the same object not in shadow. So that although the lightest parts of the subject may, in this particular case, be no lighter than the lightest tone which we can get in the print, the deepest shadows will be very much darker than anything that can be obtained in the print, so long as this is looked at, as it must be, in a moderately good illumination.

In landscape the problem exists to quite as great an extent, although in a slightly different form. Here we may possibly find that the deepest shadows in the subject are not darker than can be got in the print, although they may be; but, on the other hand, the lights are vastly brighter. If we would cut a hole in the wall on which the picture hangs, so that we could see its brightest part against a background of distant landscape, even on a dull day the high-lights of the print would appear almost black in comparison.

In this respect all the graphic arts are in much the same boat. They cannot give the light and shade in the same strength as they are seen in the actual thing portrayed. What they can do, however, is to reproduce them in the same relative proportions; and this is what is meant when it is said that a picture is true in tone. If in the original we take certain particular tones, say, for example, a part of the sky, a distant tree, a foreground high-light and a foreground shadow, and

we find that these reflect light in the proportion of forty, thirty, twenty-five and ten, to keep our picture true in tone, we must have it so that it reflects light in those proportions. It may be that our highest light can only be one-fifth as bright as in the picture. Then the relative brightness of the image in the four parts referred to must be eight, six, five and two. We shall then have brought each tone down until it is only one-fifth as bright as it was in the original; but as they are still in the same proportion as they were in the original subject, the effect will be kept true.

In writing this, we do not wish to be taken as advocating such truth of tone as in all cases a pictorial necessity. At times the photographer's picture can be improved by having the outline of the subject modified in the reproduction; and if we may depart from a slavish copy in the case of outline, it may well be contended that we are at liberty to do so in the case of gradation. It is possible to imagine cases where an alteration might be an improvement; but except by some form of local handwork it is difficult to see how it is to be altered.

The alteration in gradation which can be obtained by photographic means necessarily extends to all the gradation in the photograph, irrespective of what it may represent. We cannot, photographically, lighten the tones on some foreground high-light without lightening similar tones which represent some distant object; and a general falsification of this kind can very seldom be a pictorial advantage.

True tone rendering entails a two-fold accuracy; we must obtain a correct black and white translation of the color of the subject, and we must get the light and shade in a correct scale. The first is a matter of orthochromatism; the second of exposure, primarily, and, to a lesser degree of development.

How far orthochromatic photography should be practiced is still a matter of opinion. It is easy to say that a perfectly faithful translation such as can be got with a panchromatic plate and a properly adjusted light filter should always be made; but the problem is not so simple as all that. We cannot ignore color contrast, as this would do: and although there are many cases in which the orthochromatic rendering scores, there are many in which the non-orthochromatic one is to be preferred.

We are for the moment more concerned with that branch of the subject which deals with the rendering of the tones of the original, apart from their color; and this turns on the exposure being correct. In fact, correct exposure has been defined, in brief, as the exposure which allows us to obtain a negative in which, in inverse form, the gradations are correct throughout.

In most negatives, unless the error in exposure is extraordinarily large, the gradation is correct in parts; but if there is an error, the gradation can only be true in parts. For instance, if it is under-exposed, it will only be in the lighter parts that the gradation is correct; in the darker parts it will be faulty. In the case of over-exposure, things are just the reverse; it is the darkest parts which are correctly rendered, the lighter parts being wrong. And in each case the defect is of the same character, an insufficient differentiation of the different tones. In the under-exposed negative—as every photographer knows—the darker parts of the subject are all too much alike; he does not get what used to be called "detail in the shadows," a rather misleading term, by the way. In over-exposure, it is the gradations in the high-lights which have closed up.

These are faults, it should be remembered, which cannot be remedied in development. We may fog an under-exposed plate in some way, and so get a negative which superficially looks something like a correctly exposed one, but the print from it will show at once that it is not. The gradations in the darker parts will still be wanting. In similar fashion we may hold back an over-exposed plate with bromide, until it looks only a very little more opaque than one that has been correctly exposed; but the high-lights will not be sufficiently differentiated, and in the print will look "bunged up". Hence we can realize the supreme importance of correct exposure in tone rendering.

The part played by development in the rendering of tones has reference to what is known as the "key" of the picture: and also to the adjustment of the negative to the printing process that is to be used with it.

For example, if we have a negative which is correctly exposed, and we develop it slightly, we get a soft result, which is suit-

able for enlarging and for printing on the slower gaslight papers, both processes which tend to give contrast in a print. If we develop it a little more, it will be suitable for contact printing on rapid bromide paper, or on printing-out paper, or platinum; while if we develop it still further we shall get a result which will only be suitable for printing by the carbon process.

The development does not alter the density ratios, but only the scale. Thus if we have a negative which, lightly developed, gives us densities which may be represented as two, four and ten, and we develop it a little further we may get three, six and fifteen; a little further still might give us four, eight and twenty, and so on. If those figures are examined it will be seen that in each case the relationship which they bear to one another is the same. The final figure in each case is five times the first, and the intermediate one is twice the first and two-fifths of the last. Only if we could vary these relationships could we alter the tone values; and experiment has shown that this is not to be done by any of the usually practiced variations in development.

This shows the supreme importance of getting the exposure right, if we are to have the tone values right also. It shows, likewise, that whether we print in a high key or in a low key, or on the other hand, in such a way as to utilize the whole capacity of the printing paper we are employing, it cannot be said that the tones are incorrect or untrue. Some workers, the majority, in fact, like to get what is called a "plucky" print; that is to say, one in which the deepest tones of all are almost as dark as the paper will give, while the highest lights are almost white. They must not be absolutely the one or the other, or the tones will no longer be quite true; but the difference may be so slight as to be inappreciable unless the plain white or full black is present in the margin, to reveal the difference by its contrast. With correct exposure and development this gives a fine bold result. But it is neither more nor less correct, than a print in which the negative has been developed less and printed more lightly, so as to give a delicate result, with pearly grays even for the deepest shadows.

These are matters for the personal taste of the photographer; but in whichever way they are manifested there is still the necessity, if the result is to look right, that the tones—that is to say, the relationship of the different lights and shades to each other, shall be true.—L. H. Fuller in *Photography.*

Viewing Pictures Monocularly

If a photographic picture, say of an open landscape, having some well defined foreground interest, with nice modeling and gradation, plus well rendered planes in their correct tone values, is viewed under a good even illumination with one eye only, a remarkable stereoscopic effect will be observed. Objects in the immediate foreground literally spring out in bold, clear-cut relief against the middle distance, whilst the far distances recede softly away to the horizon. At the same time the various component parts of the picture take on form and "roundness", as if one was actually looking at the scene depicted. This phenomenon is undoubtedly explained by the fact that the ordinary camera is a monocular instrument, the plate recording exactly what the lens sees with its solitary eye.

A most interesting and instructive evening can be spent in looking through a volume of the *Amateur Photographer,* or two or three "Photograms", and testing every picture, whatever the subject happens to be, by the simple method indicated. For instance, the picture entitled, "Ruins, yet Beauteous in Decay", by H. E. Philpot, which appeared recently, and carefully observe this reproduction in the manner suggested; note how the dark yew tree comes out in front of the buildings, and how the distance beyond the arches goes back.

The difference in the appearance of the picture when viewed with both eyes, and when looked at steadily with one eye only is really astonishing, and suggests that all pictorial representations produced by photographic means might well be observed and judged in this way in order to test their stereoscopic qualities, etc. At any rate, pictorial workers would do wisely to critically examine their own pictures under these conditions, and in the event of their not coming up to the standard in this direction, to endeavor to ascertain wherein lies the cause; whether one's apparatus is at fault, or alternatively, whether the worker is himself culpable by reason of: incorrectly judged exposure, with the resulting falsification of tone values, destroying all suggestion of at-

mosphere or aerial perspective; badly arranged lighting of subject; but much less likely, careless focusing, or some other mistake or failing in one or another of the technical operations employed in producing the picture.—F. H. B. Smith in *Amateur Photographer.*

High Temperature Development of Roll Film, Film Packs, Plates and Paper

Communication No. 62 from the Research Laboratory of the Eastman Kodak Company, is devoted to the above subject and the following, the closing summary, will no doubt interest.

Roll film, film packs and plates, whether new or date-expired, may be successfully developed under tropical conditions, up to ninety-five degrees Fahrenheit, by means of most developers, with the addition of ten per cent sodium sulphate and some potassium bromide in order to prevent fog, but much better with a special developer compounded with paramidophenol hydrochloride. Although it has been recommended to develop film in the tropics by hardening the same either before or after development by the addition of a hardener such as formaline, it is only possible to secure the best results by using a developer free from such additional agents. The formula for the developer is as follows:

Paramidophenol hydrochloride	60 grains
Sodium sulphite (E. K. Co.)	440 grains
Sodium carbonate (E. K. Co.)	440 grains
Water to	20 ounces

Rinse for only one or two seconds before placing in the fixing-bath, otherwise the film is apt to soften in the rinse water.

The time of development with Eastman N. C. film at ninety-five degrees Fahrenheit for normal contrast is one and a half minutes, though the time of development may be doubled by the addition of one hundred grains of sodium sulphate (crystals) per liter of developer.

At temperatures up to seventy-five degrees Fahrenheit the regular acid fixing bath should be used, but at temperatures up to eighty-five degrees Fahrenheit the following chrome alum bath is necessary:

Hypo	7 ounces
Sodium sulphite (E. K. Co.)	655 grains
Potassium chrome alum	1310 grains
Acetic acid (glacial)	40 minims
Water to	32 ounces

Dissolve the sulphite and chrome alum together and add to the hypo solution, finally adding the acetic acid.

At temperatures up to ninety-five degrees Fahrenheit, the following formaline bath should be employed:

Hypo	9 ounces
Sodium sulphite (E. K. Co.)	830 grains
Formaline (formaldehyde 40 p. c.)	4¼ ounces
Water to	32 ounces

First dissolve the hypo, then the sulphite, and finally add the formaline.

In order to eliminate the odor of the formaline, the bath should be enclosed in a covered tank as far as possible. The above baths keep well at the temperatures stated, so that for the professional and amateur finishing trade the special chrome alum bath is very suitable, while in special cases, such as expeditionary work, when very high temperatures may prevail, the formaline bath will give perfect results.

Film packs may be successfully treated in a tray in the same way as N. C. film, though so far it has not been possible to devise a method for using the Kodak film or film pack tanks at the temperatures named.

Although no difficulty is to be expected when developing gaslight and bromide papers at high temperatures, the use of a stopbath of three per cent acetic acid, and twice the usual amount of liquid hardener in the fixing bath is recommended.

In conclusion, the author wishes to express his appreciation for the assistance rendered by Mr. H. Cohan and Mr. S. Tulpan during the course of the investigation.—J. I. Crabtree.

The Influence of Illumination on Color in Autochromes

Every autochrome worker soon learns that a good powerful illumination during the exposure conduces to the richest color results. Nor is he long in finding out that it is better to choose for his work what a monochrome worker would call a flat lighting. Perfectly successful work can be done with the sun behind the camera. One reason for this is that the differences of color give that necessary variety, which in an ordinary photograph is supplied by differences of light and shade.

But a more powerful reason for avoiding deep masses of shade when taking color pho-

tographs is that they are both darker and duller in the resulting picture than they were in the original, if development is stopped just when the high-lights are fully brought out. This lack of brightness and color in the shadows makes the lighter parts too prominent. This comparative dullness of the shadows in subjects that are strongly lit is due mainly to a lack of latitude in color plates, but to a less degree to other phenomena which need not now be considered.

There is an apparent want of color in pictures taken on dull days when the illumination is perfectly even; and for this, want of latitude in the plate does not account. Experience shows that a decidedly more brilliant color record can be obtained from a brightly illuminated subject than from the same subject under a comparatively poor light: although in the second instance the plate may have received just as full an exposure. This has been attributed to some peculiarity of the plate; but my purpose is to show that it is due very largely to an altogether different cause.

Anyone who sees aniline dyes in bulk for the first time is almost sure to be surprised to find that many of the dyes in the solid form appear nearly or altogether without color. They look quite black, but on being dissolved and spread out on paper exhibit a most intense coloration. A more familiar example is in the cakes or pans of water color used by painters. Mauve, for instance, in a wash of the proper depth, is an extremely powerful pigment; but in the pan it is so dark that it would be difficult for one to tell at a little distance what its true color really is. On the other hand, some pigments, such as vermillion and a number of the yellows, appear just about the same in the lump as they do applied to the paper. The question is, What causes the difference?

The answer is that the black-looking pigments do not of themselves reflect light appreciably; they show up only by light which passes through them. If they are spread thinly on white paper, the light goes through the layer of color to the paper, is reflected, and penetrates again through the color to the outside; and in this double passage all the colors except that one transmitted by the particular pigment are filtered out; so that the emerging light, and therefore the pigment, appears brightly colored. On the other hand, if the pigment is in bulk, or if it covers the paper to too great a depth, very little of the light that strikes it comes back; nearly all is absorbed, and so, naturally, the substance appears without color, or black. But those colors which appear of their natural tint, regardless of what quantity may be aggregated together, reflect light of themselves without additional help. Their molecular structure is such that they send back light of a certain refrangibility, and absorb all the rest, and hence appear of a definite hue. For this reason, there is no necessity for them to be spread out on a reflecting surface in order to show their hue: they are, in fact, often quite opaque, so that light penetrates them only to a very small distance indeed.

All of this has a direct bearing on our subject, because both of these classes of pigments are found in nature. The coloring matter of living things is generally of the first—transparent — variety; whereas in the case of most minerals it is of the second, or opaque, kind. Plants, for instance, have green chlorophyll in their leaves; and the earth and many rocks are stained red by salts of iron. In nature, however, we rarely find pigments spread over an intensely white reflective surface, as the colors are spread over paper by a painter. They are diffused throughout the substance which they color—a substance that is only imperfectly reflective in any of its parts. Hence the light that is reflected from them comes from various depths within the living structure—some from near the surface, some from further in the interior of the leaf stem, or what not, that is reflecting the light.

Observe the conditions closely. That light which comes from the surface of the object will be less saturated with color than the part which comes from the interior, since it will have passed through a lesser thickness or quantity of pigment. So, then, on a dull day, when the light is of sufficient strength to penetrate only a minimum distance into the object, it emerges with a smaller burden of color than on days when the light is bright, when it penetrates deep down into the partly reflecting substance, traverses a thick layer of coloring matter, and comes out more completely charged with color. Even the comparatively opaque coloring substances, since they are not quite opaque, behave to some extent in the same way.

On bright days, therefore, the colors that

usually occur in nature are not only more intense or brilliant, but are also, as a rule, actually more pure or saturated than on dull days. We notice the one without perceiving the other. We see the livening of the landscape under an increasing sun; but unconsciously attribute it altogether to the augmented light, forgetting the role that color plays in causing the transformation. We do not separate the qualities of light and color in judging the well-lit scene or the one under an overcast sky: but the color-plate records these colors closely as they are; proper exposure eliminates the difference of brightness that existed in the originals; the two plates in consequence show marked differences of color, in spite of the fact that they are equally transparent.

It is probable that the reason this explanation does not occur at once, or that we are reluctant to accept it, is that we do not ordinarily see two widely distinct aspects of nature in juxtaposition, as they are presented by two such color photographs. We see them at different times, and memory does not serve us well enough to lead us to the truth. Alterations of lighting take place so gradually in the processes of nature that the changes of color that go with them easily escape us.

There are, however, certain times when we do notice these changes of color. This happens especially when a rather abrupt difference of lighting occurs. For instance, if one observes a landscape partly obscured by the shadow that falls from a cloud, one will notice that the difference in the actual amount of color perceivable in the shaded and sunlit area is very considerable. One may often remark a similar effect in a room as it is suddenly lighted up by the passage of a cloud from over the face of the sun. Dark furniture and picture frames, which were previously of a gloomy monotone, now show beautiful variations of tint in their grain, and the color of rugs, books, etc., comes out vividly.

Both reflection and observation, therefore, go to show that the disparaty in the purity of colors noticeable in color photographs of the same subject taken in widely different intensities of light represents pretty nearly what is actually the fact, and is due to no inherent or obscure fault in the plate at all.

It follows that there are certain cases in which any reasonable difference in illumination does not result in any defect of color rendering whatever. A brightly colored painting, for instance, should photograph well in almost any light. So also should any object which light, be it never so dull, completely penetrates; such as colors in solution, or, using an example nearer to nature, the petals of most flowers, certain leaves, etc. These should photograph equally well when poorly as when brightly illuminated. One of the very best flower pictures the writer secured was taken indoors in the early spring, with a heavy, overcast sky. The exposure was five minutes at f-8, but the colors of the resulting picture were all that could be desired.

On the other hand, it is also apparent that certain dark, dull colored objects demand all the light that one can get on them, because their true glow of color does not appear by mere surface reflection. The light must be made to penetrate into them to bring their latent color to the surface.

These facts should serve as a guide when making exposures under uncertain lighting conditions; and, of course, as in all questions where design or composition enter, the correct procedure will be determined very largely by what is paramount in the picture. —Noel Deisch in *Photography*.

Illinois College of Photography

President Bissell visited Washington, D. C., recently in the interest of the Government Photographic Service.

R. K. Wilmarth of Wisconsin, class of 1915, writes that he is somewhere in England and expects soon to be in France assisting in the greatest fight for liberty of the ages.

Hermon Fichweiler, Jr., class of 1913, was a welcome visitor at the College recently. His new uniform with the badge of promotion to master engineer is especially becoming. Mr. Fichweiler was enjoying a short furlough before leaving for France.

J. B. Whitcraft, class of 1915, and George Hunt, class of 1917, have entered the service and are in attendance at the Aerial School at Rochester, New York. Upon entering the school, Messrs. Whitcraft and Hunt were rapidly promoted upon their credit marks from the College.

THE AMATEUR AND HIS TROUBLES

Conducted by Fayette J. Clute

Photographing Furniture

A furniture dealer in one of our interior cities conceived the idea of having photographs made of a good portion of his stock in order that he might be prepared to interest possible buyers in the surrounding towns without compelling a visit to his store until the actual making of the sale was in progress. He reasoned that if the mail-order houses could sell by catalogue illustrations he should be able to do the same with some good photographs. The photographer was called in, some negatives were made,—but the results were a sad disappointment. I saw one of them and can vouch for their poor quality. Mr. Dealer was in the city, called, and explained that he wanted to get in touch with someone here in San Francisco who could do the work properly. As it happened, the photographer had already written me complaining of his lack of success and asking for help. So I explained to Mr. Dealer that the trouble was, no doubt, due to his local man not having the proper equipment for this special work through never having had any of it to do, but a second attempt would result better. I had the photographer's city dealer send him a second-hand series V Bausch & Lomb Protar of good long focus for his 6½x8½ plate, one that was cheap, because working at f-18, together with a Wratten K3 filter. That happened about six weeks ago. A few days ago Mr. Dealer was in again and showed me some of the best examples of furniture photographs that I had ever seen, and they were made by the same photographer who had made the first unsatisfactory ones.

These first were made with a lens of too short focus, giving violent perspective, and failing to use a filter had increased to apparent ill effect of uneven lighting. As the photographer explained to me, he had failed to realize that with such subjects a small stop had to be used and there was therefore no need of buying a high-priced, because fast, anastigmat. With the excellent one working at f-18 he could afford one of long focus, as it cost no more than a fast one of about half the focal length, and second-hand cost even less. The filter question he has worked out from the instructions given and now uses several of the Wratten set, the G, or strong yellow mainly, the A or red for dark woods, with one of the lighter K filters for furniture with tapestry. A little thought and study, based on the first crude results, has greatly improved the lighting, and, of course, he has learned that full exposure and careful development was required.

Obsolete Diaphragm Markings

Almost everybody is familiar with the well known f- and U. S. systems of numbering lens diaphragms, but occasionally a different series of markings are encountered on an old lens, and these are quite a puzzle until understood. In 1889 the Royal Photographic Society adopted a system in which f-10, designated as No. 1, was the standard, and the other stops were numbered to show their relative required exposures. Stop No. 2 required double the exposure, being actually f-14, No. 4 required four times, and the stops larger than f-10 or No. 1 were marked ½, ¼ and so on, indicating one-half, one-fourth and other fractional parts of the exposure required by the standard stop or the one marked No. 1. Dallmeyer at one time used a system in which the square root of f-10 or f3.16 was used as the standard, and the other stops numbered to indicate doubling of the exposure. No. 2 by this system becomes f-4.7, No. 4 f-6.32, and so on. Goerz and Voigtlander used a similar system, except that their stop numbers, while showing the

number of times required as compared to the f-3.16 stop, they did not follow the Dallmeyer ratio. Still another system, introduced by Zeiss, took f-100 as the standard or No. 1; No. 2 requiring one-half the exposure, was really f-71, No. 4, requiring one-fourth the exposure being f-50, and so on. Later Messrs. Zeiss adopted f-50 as the standard, marking it No. 1, and the others accordingly. This system can be easily identified by the fact that the smallest stops have the smallest numbers. Various other manufacturers and dealers adopted one or the other of these systems, and therefore lenses bearing other names than these mentioned may be found carrying one of these several systems of diaphragm markings. In addition, not a few lenses have been turned out in the past with stops simply numbered in rotation, generally beginning with the largest one, but having no particular relationship to each other as to the "times of exposure" required.

Exposures In Enlarging

Despite the fact that correct exposure in bromide enlarging, just as in negative making, is of paramount importance, it is highly probable that not half of the bromide enlargements turned out by the average worker have been properly timed. And not being rightly timed they are not as good prints as they might otherwise be. In one case that came under my notice some time ago the worker was timing all his exposures entirely too long in order to make them fit a developer that he had altered and changed about, trying to make it fit some previous wrong exposure until it was quite unsuited to the work. The exposing of a test strip takes but a few minutes and where the least doubt exists one should always resort to such a trial. It is not at all necessary to fully develop the strip or even pour the developer out into the tray. Simply pin up the strip so that it passes across an average portion of the subject, then hold a card to cover two-thirds of it for part of a determined exposure, say one-third, then lower it to cover only one-third, while the exposure continues, finally exposing the whole for the remaining one-third of the time. Say the estimated proper exposure be twelve seconds; the three exposures given should be for a period of six seconds each. This would result in the upper end of the strip having a total exposure of eighteen seconds, the center portion twelve and the lower end six. The strip immersed in the graduate for a minute or two will show, by the speed with which it develops, which of the three exposures are right, or the nearest so. This takes much less time to do than it does to tell.

White Carbon Tissue

An Ohio correspondent writes to ask if there is any such thing as a print in white on a dark surface instead of the usual thing, a print in black or some dark color on a white ground. There certainly is. Some years ago we saw some very fine effects of this kind in which the lights were produced by the carbon process, the darks of the picture being the natural grain of some very finely polished dark wood on which the white print had been mounted. This white carbon tissue is produced regularly by the Autotype Company, and sold in this country by George Murphy, Incorporated, of New York. One must, of course, print from a positive instead of a negative; but the positive is easily made and making it through the camera enables one to secure any size of print that he may desire, by making it of the proper size for printing by contact. Strange as it may seem, there is no tendency to bichromate staining, and the one using the tissue for the first time will be surprised at its rapidity and at the clearness of the printed image produced by the darkening of the bichromate in the white pigmented gelatine of the tissue. And while we have never had the pleasure of seeing any, we have heard of very fine results having been secured by combining a weak print on this white tissue with a print on regular colored tissue transferred on a toned support. Carbon prints on a somewhat dark support are frequently quite effective, except for the general dullness that they have, but by using another print in this white carbon in combination therewith, one can, it would seem, secure the same effect that the crayon artist does by picking out his high-lights on his deep toned papers with white chalk.

INTERNATIONAL PHOTOGRAPHIC ASSOCIATION

I. P. A. Lantern Slide Interchange

The Eastern Division of the I. P. A. Lantern Slide Interchange has recently enrolled a number of new members. The first set was sent out several weeks ago, and each member who has seen it has expressed his appreciation. The slides are very interesting and of good quality. The Director hopes that those members who have not yet been afforded an opportunity of seeing slides will have patience. They will realize that it takes time to organize an activity of this kind. Another set will be sent out very shortly, and when several sets are in circulation, most of the delay that is now being experienced will be alleviated.

Any worker who is interested in lantern slide making is cordially invited to join the interchange. The director, Arthur H. Farrow, 51 Richelieu Terace, Newark, New Jersey, will gladly send full particulars.

Officers of the I. P. A.

F. B. Hinman, President, 1369 South Washington St., Denver, Colo.

J. H. Wincheli, Chief Aibum Director, R. F. D. No. 2, Painesville, Ohio.

Fayette J. Ciute, Generai Secretary, 413-415 Ciaus Spreckels Buiiding, San Francisco.

Answers to inquiries concerning membership and membership blanks will be supplied by the State secretaries. Aibum directors are at present acting as State secretaries in such of their respective Statcs as have as yet no secretaries.

John Bieseman, Director Post Card Division, Hemlock, Ohio.

James B. Warner, Director Stereoscopic Division, 413-415 Claus Spreckeis Building, San Francisco.

NOTE.—Ail stereoscopic siides sent to Director for the circulating sets must be mounted, titied, and show the maker's name and I. P. A. number on the back of mount. Notify the Director how many mounts can be used, and a supply will be sent you by return mail.

A. E. Davies, Director Lantern Slide Division, 1327 Grove St., Berkeiey, Caiifornia.

Arthur H. Farrow, Secretary Lantern Siide Division, 51 Richelieu Terrace, Newark, N. J.

STATE SECRETARIES

California—A. E. Davies, 1327 Grove St., Bcrkeiey.

Idaho—Eugene Clifford. 902 9th Avenuc, Lewiston.

Iowa—Harry B. Nolte, Algona.

Kansas—H. H. Giii, Hays City.

Mississippi—George W. Askew, Jr., 211 34th Ave., Meridian.

Missouri—J. F. Peters, Room 210 Union Station, St. Louis.

New York—Louis R. Murray, 21 Ciark St., Ogdensburg.

Oregon—F. L. Derby, La Fayette.

Texas—Emmett L. Lovett, care Southern Fiectric Company of Texas, Wichita Falls.

Wisconsin—F. W. Freitag, 500 Monument Square, Racine.

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German — George N. Baumiiier, Nutwood, Ohio.

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Aibum Director—J. Jesus Martinez, Ap. 5, Morelia, Mich., Mcxico.

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Aibum Director—R. W. Frankiin, Dodsiand, Sask., Canada.

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Iiiinois—George A. Price, Box 286, Champaign.

Indiana—H. E. Bishop, 551 East 40th St., Indianapoiis.

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Kansas—H. E. High, Box 232, Ellsworth.

Maryland—E. G. Hooper, 218 East 20th St., Baitimore.

Massachusetts—John Mardon, 161 Sumner St., Boston.

Michigan—W. E. Ziegenfuss, M.D., 171 Richton St., Detroit.

Minnesota—Leonard A. Wiiliams, St. Cloud.

Mississippi—George W. Askew, Jr., 211 34th Ave., Meridian.

Missouri—Wharton Schooler, R. F. D. No. 2, Eolia.

New Hampshire—Mrs. A. Leonora Kellogg, Box 224, Londonderry.

New Jersey—Arthur H. Farrow, 51 Richelieu Terrace, Newark.

New York—Charies F. Rice, P. O. Box 517, Mamaroneck.

NOTES AND COMMENT

A Department Devoted to the Interests of Our Advertisers and Friends
In it will be found much that is new and of interest

Reported by William Wolff

It happened April 1st. Constance Luce of Gonzales to J. C. Vassar of Paso Robles, is the way it was announced. The bride received a seven-passenger Buick for a wedding present.

Visitors from Santa Clara Valley recently were Mr. and Mrs. Crandall and J. C. Franklin, Palo Alto; G. C. Hulse and M. Lyne, San Jose.

R. L. Reid, formerly of Berkeley, has bought out Farrington & Rodger, druggists, Santa Cruz.

W. H. Sherer of Santa Cruz, and O. Hageman of Watsonville are both very busy with school work.

Mr. and Mrs. C. C. Green and two boys of Salinas took a Sunday off recently and motored to Carmel-by-the-Sea.

Miss Ethel Lyons now has charge of the photographic department of Bullock's, Los Angeles. She is ably assisted by Miss Helen Schwartz.

H. A. Parker of Pasadena received a very handsome present April twenty-seventh,—a baby girl.

Miss Wallace still holds forth at the Sun Drug Company's, Los Angeles.

C. C. Lord and wife were in San Francisco when the writer called on them at their store in Long Beach.

Hallie Cody, formerly with Shirley Bacon of Long Beach, is now with Earl V. Lewis of Los Angeles, in the finishing department.

Shirley Bacon is as active and as young looking as ever.

Fred Twogood of Riverside, motored into Los Angeles to see the writer while there.

Fred Lindroth of Modesto has sold his place to Scott G. Snowden.

J. E. Stromberg of San Diego has temporarily retired from business.

Mrs. D. D. Barber has purchased the studio of Evan Davis of Brawley. Mr. Davis will devote his entire attention to his El Centro studio.

W. Scott, formerly of Brawley, has opened a studio at San Pedro.

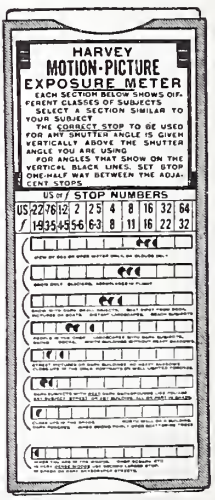
Frank Aston has reopened the studio at San Luis Obispo formerly conducted by Miss Elsie Polin.

W. L. Jacobs of Verde, Arizona, has opened a new studio. He does the commercial business of the Verde Valley.

W. R. Mitchel of Los Angeles, and Fred Hartsook of Los Angeles and San Francisco, have both opened branches at Camp Kearny. The latter has also opened a branch at San Diego.

An Exposure Meter For Motion Picture Work

The manufacturers of the well known and justly popular Harvey Exposure Meter have sent us one of their new Harvey Motion Exposure Meters, a cut of which is shown herewith. The one important feature, and it is indeed a new and important one, possessed by this meter alone, is that the meter itself takes care of the varying exposures due to variations in cranking speed. With the shutter half open and a cranking speed of two turns per second, the exposure is one thirty - second; with the cranking speed changed to one and one-half turns per second, the exposure becomes one twenty-fourth second, and so on with other settings of the shutter. With any other form of meter, these figures must be remembered and employed, but with this new meter one reads off at a glance the correct exposure for any shutter setting. Other features suggested by the actual use of the regular Harvey Meter by


HARVEY
MOTION-PICTURE
EXPOSURE METER
EACH SECTION BELOW SHOWS DIFFERENT CLASSES OF SUBJECTS
SELECT A SECTION SIMILAR TO YOUR SUBJECT
THE CORRECT STOP TO BE USED FOR ANY SHUTTER ANGLE IS GIVEN VERTICALLY ABOVE THE SHUTTER ANGLE YOU ARE USING
FOR ANGLES THAT SHOW ON THE VERTICAL BLACK LINES, SET STOP ONE-HALF WAY BETWEEN THE ADJACENT STOPS
STOP NUMBERS
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moving picture operators, have been incorporated in this new meter, with the result that the greatly increased simplification has been added to the accuracy and effectiveness that caused the original meter to achieve its popularity in even the specialized field of motion picture work. The new Harvey Motion Picture Exposure Meter is a marvel of convenience and efficiency and cannot help but achieve a universal popularity with the motion picture camera men. It is manufactured by G. L. Harvey, 105 South Dearborn Street, Chicago, Illinois, and can be purchased from or ordered through any dealer in photographic supplies; price two dollars and fifty cents.

Mr. Lion With Henry de Roos

Enno Lion, well and favorably known to the trade of this section through his connection with the Simplex Photo Products Company during the Exposition, has accepted a position with Henry G. de Roos, the popular Third Street dealer in photographic supplies. Mr. Lion brings to his work a wide knowledge of photography and particularly of camera, lens and shutter capabilities, and this in turn is placed at the disposal of those with whom he comes in contact in the regular course of business at this busy store. In addition, Mr. Lion seems to possess an inexhaustible fund of patience and a naturally pleasing personality that must make him a most decided favorite with those dealing with him. Mr. de Roos is to be congratulated upon securing his services as an addition to his present most popular force.

Where To Find Information

Owing to the enormous increase of Government war work, the Governmental departments at Washington are being flooded with letters of inquiry on every conceivable subject concerning the war, and it has been found a physical impossibility for the clerks, though they number an army in themselves now, to give many of these letters proper attention and reply. There is published daily at Washington, under authority of and by direction of the President, a Government newspaper, *The Official Bulletin.* This newspaper prints every day all of the more important rulings, decisions, regulations, proclamations, orders, etc., as they are promulgated by the several departments and the many special committees and agencies now in operation at the National Capital. This official journal is posted daily in every post-office in the United States, more than fifty-six thousand in number, and may also be found on file at all libraries, boards of trade and chambers of commerce, the offices of mayors, governors, and other Federal officials. By consulting these files most questions will be found readily answered; there will be little necessity for letter writing; the unnecessary congestion of the mails will be appreciably relieved; the railroads will be called upon to move fewer correspondence sacks, and the mass of business that is piling up in the Government departments will be eased considerably. Hundreds of clerks, now answering correspondence, will be enabled to give their time to essentially important work, and a mass of business will be done, and at the same time, a fundamentally patriotic service will have been performed by the public.

Those New Lens Prices

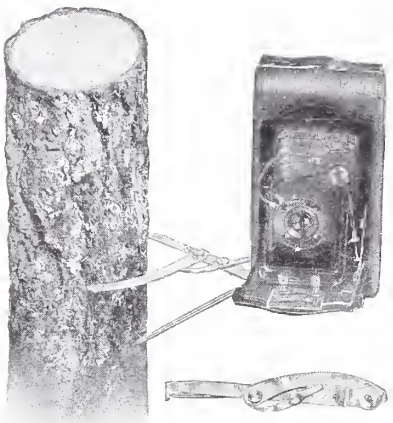
I was in a stockhouse the other day and the man in front of the counter was being shown a No. 15-a IC Bausch & Lomb Tessar that was listed in last year's catalogue at fifty dollars, but it was explained that the new price brought it up to fifty-eight dollars and fifty cents. This, the gentlemen seemed to think was a little too great an advance, but the clerk simply produced a copy of the 1914 Bausch & Lomb catalogue and showed him that the price at that time was fifty-seven dollars, a reduction in price about that time being the cause of the fifty dollar price in the 1915 and following catalogues. Putting the matter in this light the customer saw that the lens was costing him only one dollar and fifty cents more than it would have cost him three years ago, and consequently the advance that he objected to did not seem so inconsistent as he had at first imagined, and the price was paid without further protest.

Without looking it up, I do not know whether the same holds good in the case of all lenses on which the price has been slightly advanced, but I feel quite sure that none of our lens manufacturers advanced their prices until it was absolutely necessary to do so; and candidly, the advance should have been inflicted upon us earlier than it was, and would have been, had our lens manufacturers been a fractional part as willing to take advantage of the conditions as have

been those engaged in some other lines of manufacture.

The Tree-Pod

About the handiest and most satisfactory piece of apparatus the photographer can get hold of is one of these "Tree-Pod" camera supports that take the place of the



cumbersome tripod. And do not imagine from the name that it is applicable only to trees. It can be instantly attached to the corner of a house, the back of a chair, or almost anything. It is of steel throughout, nickel plated, and will last a lifetime. Counting the rivets that hold it together, only seven pieces enter into its construction, and there are no parts to get out of order or cause trouble. It is capable of sustaining the weight of an 8x10 camera, and yet it is so compact that it may easily be carried in the pocket. And the best of it is, it costs only one dollar and twenty-five cents, quite an inducement in these times of soaring prices. It is manufactured by the Simplex Photo Products Company, Richmond Hill, Long Island, New York.

New Process Plate

The Central Dry Plate Company, Benavis, St. Louis, Missouri, announce the introduction of their new "Process" plate for photo-engravers. This new plate, they claim, will give a clean, sharp dot with the minimum of irradiation or halation, and that crisp negatives of satisfactory excellence for both line or half-tone may be obtained with ease. In the hands of the commercial photographer these plates give negatives of extreme contrast with ease and certainty. A plate of this kind should be quite useful for certain kinds of work, and a trial, at least, should be given them.

Illinois College of Photography

The prospect is that, at the close of the war, the College will have the largest enrollment in its history.

Roland Ribbe, class of 1912, as a member of the Signal Corps, adds one more to our number of students in France. The service to which he is called necessitates the use of his knowledge of "Three Color".

Sergeant Russell Penglase, class of 1916, who has been a member of the Signal Corps for the past six months, is now instructor of a group of soldiers in the U. S. School of Cinematography at Columbia University, New York. We are very proud of Mr. Penglase, as well as of all our other students who are enlisted in the Army and Navy.

Miss Wallace, who postponed the completion of her course in the Illinois College of Photography, for a trip to California for the winter, writes that she is impatient to resume her studies and will return at an early date.

John Rinehart, who for so many years stool faithfully at the helm, as Secretary of Bissell Colleges, is now doing his part of Government service. He is chief clerk in the Department of the Interior, U. S. Bureau of Mines, in the State University at Columbus, Ohio, a position that we know he is particularly competent to fill.

The Price of Shameful Peace

More than a billion dollars of American agricultural exports were sold to the European nations at war with Germany during 1917. Had this nation maintained peace at the price of obedience to the German war zone decree, this European market would have been closed and this billion dollars worth of agricultural products would, most of them, have rotted on farms and in warehouses, or been used in unprofitable ways, with consequent stagnation and ruin to the American farmers.

Interest as well as duty urges the American farmer to give financial support to his Government in this war.

Buy Liberty Bonds.

NOTES AND COMMENT

Durable Amidol

One of the few disadvantages connected with the use of the amidol developer is the short time which the developer remains in good working condition. The following hints may help to minimize this trouble. It is usually recommended to make the solution of working strength, but this is a mistake. If the developer is made with half or even a fourth the normal amount of water, it will keep much better; it should be diluted to normal strength as required. The water used to dissolve the sulphite should be well boiled and allowed to cool a little before adding the sulphite, the amidol being added when the solution has cooled to normal temperature. There is no advantage in making stock solution of sulphite and adding the amidol in small quantities as required, except that the surplus may be thrown away. The mixed developer will keep in working condition longer than the plain sulphite solution does. The keeping qualities of this developer are much improved by the addition of a little potassium metabisulphite; say, one dram to forty ounces of normal strength solution. There is a considerable difference in the quality of amidol as now sold. The best keeping samples are in bright metallic-looking crystals, which pour freely from the bottle and give an almost clear solution. Other samples, which work well when freshly mixed, are duller in appearance, and cling together as if damp. The solution is dark and turbid when mixed, but clear if allowed to stand: the solution does not keep so long unused nor does it yield so many prints before becoming exhausted.

Stenographers and Typewriters Wanted

The United States Government is in urgent need of thousands of typewriter operators and stenographers and typewriters, both men and women. All who pass examinations for the departments and offices at Washington, D. C., are assured of certification for appointment. It is the manifest duty of citizens with this special knowledge to use it at this time, where it will be of most value to the Government. Women especially are urged to undertake this office work. Those who have not the required training are encouraged to undergo instructions at once.

Examinations for the Department Service, for both men and women, are held every Tuesday, in four hundred and fifty of the principal cities of the United States, and applications may be filed with the Commission at Washington, D. C., at any time.

The entrance salary ranges from one thousand to twelve hundred dollars a year. Advancement of capable employees to higher salaries is reasonably rapid. Applicants must have reached their eighteenth birthday on the date of the examination.

For full information in regard to the scope and character of the examination, and for application blanks, address the U. S. Civil Service Commission, Washington, D. C., or the Secretary of the U. S. Civil Service Board of Examiners at Boston, Mass.; New York, N. Y.; Philadelphia, Pa.; Atlanta, Ga.; Cincinnati, Ohio; Chicago, Ill.; St. Paul, Minn.; St. Louis, Mo.; New Orleans, La.; Seattle, Wash.; San Francisco, Cal.; Honolulu, Hawaii; or San Juan, Porto Rico.

JOHN A. MCILHENNY,
President, U. S. Civil Service Commission, Washington, D. C.

"Mittel-Europa"

"Mittel-Europa is in existence today", says Frederick Naumann, a prominent member of the Reichstag.

He is right. Germany stands possessed of all she hoped to gain when she forced this war. She has reduced her allies to military and economic dependence. She dominates Belgium, Northern France, Poland, Russia, Serbia, Montenegro, and Roumania. More than two hundred million people are under the dictation of Prussia.

If the war ends with conditions as they are at present, Germany's brutal policy of force will dominate the world.

Italy, France and Great Britain have a combined population of one hundred and eighteen million. They are much smaller in area than the Mittel-Europa empire would be, are detached from each other, and confined within narrow limits on the south and west of Europe. Necessarily they would become second-class powers.

The United States, practically alone, would be left to face the aggression of a power with about twice its population, directed by autocratic rulers toward further conquest.

The only way to make ourselves safe is to win the war.

CAMERA WANTS

Advertisements of the above nature shown below will be inserted under this heading at the rate of fifty cents each insertion, for twenty-five words or less; each additional word, two cents extra, cash with order. Those of positions wanted inserted once free. No business advertisements accepted.

WANTED Photographic books and magazines in exchange for figure studies and prize winning landscapes. State what you have. H. Brodine, 913 Bryant Ave., Bronx, New York.

SALE OR EXCHANGE One No. 3 8x10 Century Studio camera, complete with No. 3 stand, 5x7 lens and 5-inch Packard shutter; outfit complete $35.00. Smith's Photo Studio, Colville, Washington.

FOR SALE Empire State view, 8x10, good as new and perfect. Make offer. Rev. V. A. Wood, Cranford, N. J.

PHOTOGRAPH STUDIO California town 10,000, bean and oil district. Fully equipped, modern, one other studio. Bargain, cash and terms. Willett, 1738 Pine St., San Francisco, Cal.

FOR SALE New Improved Seneca View camera, fitted with Seneca three-focus convertible symmetrical lens, speed f-8 and Autic Automatic shutter with carrying case, 3 double platcholders, focusing cloth and large folding tripod. Our price for immediate acceptance, $25.00. Only used a few times and like new. Burke & Drewelow, Wesley, Iowa.

SALE OR TRADE Ill health in my family makes it necessary to dispose of splendld paying studio. Will sell or trade for studio or property well located in Arizona, New Mexico or Colorado. Cross Studio, Corpus Christi, Texas.

STUDIO WANTED Would like to buy going studio in Southern California or in Bay section, preferably Oakland and vicinity. Must be modern with good skylight and well equipped, centrally located and reasonable rent. Address James C. Thompson, care E. B. Thompson, 6 Ellicott Ave., Batavia, N. Y.

EXCHANGE Bathing girl and figure study negatives for good second hand camera or other equipment. State what you have in first letter. Floyd Ferguson, Buda, Texas.

FOR SALE Leading studio in one of California's best towns, equipped with Century camera and stand, Goerz lens, viewing and enlarging outfit; fine location and low rent, reason for selling, interested in other business. It will pay you to investigate; a bargain for a quick sale. Address Studio, care "Camera Craft", San Francisco, Cal.

FOR SALE Eastman 5x7 Home portrait outfit; Victor Studio flashlight complete and numerous photographic articles useful to an amateur or professional. Send for list with prices. A. J. Sicard, 11 Locust St., Athens, Pa.

FOR SALE Paying studio with or without equipment, in whcat country, no competition in 25 miles. A bargain, reasons for selling. Box 84, Sprague, Wash.

FOR SALE Korona Panoramic view camera, 8x20, case, 2 extra holders, good condition, list $70.00, net $45.00. F. L. Wright, Racine, Wis.

FOR SALE Exceptional opportunity, modern studio, owner retiring; educational center of state. E. N. Rogers, Laramie, Wyo.

FOR SALE 5x7 Turner-Reich lens, series III, f-6.8, Pegno shutter with 2K filter, sell for $25.00. Address Box 504, Missoula, Mont.

FOR SALE Photographic lens, Bausch & Lomb Zeiss Protar No. 7, finest made, cost $150.00 for $125.00. C. W. Fisher, 660 Market St., San Francisco, Cal.

A SNAP A first class studio for sale, cheap, in the best town in Northern Georgia, about 6000 inhabitants. For particulars write J. S. Reese, Box 507, Cedartown, Ga.

FOR SALE One of the best paying amateur finishing shops and studio in the Northwest, population 7000. Address M. J., care "Camera Craft", San Francisco, Cal.

FOR SALE The leading studio in the best city of the Pacific Northwest. Big shipbuilding plants employing thousands of men; cantonment of 20,000 soldiers, population 275,000, and growing rapidly. Location best in the city, new eight-story building, three elevators; rent $180.00 per month. Business of over $20,000.00 last year; this year's business so far is much better than last. The best buy you will find if you wish to make money. A no-coupon studio, doing stralght legitlmate business. Price $5000.00 cash. Reason for selling, wish to enter the service. Address C, care "Camera Craft", San Francisco, Cal.

POSITION WANTED Operator and printer wishes position in or near San Francisco. Have been connected with New York studio ten years up to a month ago. Would start on moderate salary if inducements are good. Not subject to draft. Address Oliver Lippincott, Jr., Mountain View, Cal.

FOR SALE Speed Graphic postcard Cari Zeiss IIB Tessar; "Camera City" 5x7 Seneca view anastigmat lens; Ansco No. 2, f-4.5 Tessar, Velostigmat wide angle, f-9.5; 5x7 lens; Goerz Anschutz 3¼x4¼ Goerz Dagor, etc.; Carl Zeiss Tessar f-6.3 lens; Monarch 8x 10 wide angle; Century 5x7 long draw. Description and price sent, will consider fair trade; can use Automatic revolver or gun. H. Liss, Municipai Court, City Hall, Minneapolis, Minn.

SALE OR RENT My husband has joined the Colors. Will, therefore, rent or sell studio at a sacrifice; only studio in Highmore, So. Dak.; well cquipped and doing a nice business. For further particulars address Mrs. H. Lee Jones, Mt. Vernon, So. Dak.

FOR QUICK SALE Studio at Fergus Falls, Minn.; $400.00 cash buys it —cameras, lenses, backgrounds and everything needed in a studio. Rent very low. Reason for selling is that I have a studio at Duluth and cannot atttend to both. For further information write W. Babajoff, 7 East Superior St., Duluth, Minn.

FOR SALE Best one-man studio in Iowa; owner has other business interests which will occupy all his time after October 1st. For further particulars write E. H. Thomson, Cherokee, Iowa.

FOR SALE Am enlisting in the army and wish to sell my studio, which is equipped with new strictly up-to-date complete outfit, No. 2 Vitax lens, electric printer, retoucher, etc. This is a booming little city, as the Government has placed a twelve million dollar order with the Four Wheel Drive Auto Truck Company located here. Would turn over keys and complete outfit for $600.00. Rent only $15.00 per month, which includes water and electricity for light and power; also steam heat. Address Milton Bantin, Clintonville, Wis.

WANTED All-around man; prefer one who can do retouching. Will pay good salary to right party. For particulars address J. P. Hoffman, care Green-Dragon Studio, Sioux Falls, So. Dak.

CAMERA WANTS—Continued.

STUDIO WANTED In small California town, preferably a coast town or between the coast and interior. Must be at a reasonable price. Box 23, Route 1, Hayward, Cal.

FOR SALE Studio in town of 1000 in Iowa's richest farming district. 20 miles each way to draw from; also branch studio in town of the same size; low rent; $350.00 will buy if taken at once. Address J. E. Thomas, Ocheyedan, Iowa.

FOR SALE A snap if taken at once. Complete outfit and stock for $250.00; studio can be bought or rented cheap. Address G. Spykerman, Boyden, Iowa.

FOR RENT Fine little residence studio; good town, population 2000; all improvements and conveniences. Address S. D. Joy, Three Rivers, Mich.

FOR SALE Ground floor studio in town of 1600, railroad town, low rent, plenty of kodak work; also good demand for view work; prices good, no postals made; complete equipment; city water, sewer, electric lights, north light; also Northern Light for dark days; no competition, three good towns to draw from. Will sell on reasonable terms to reliable party. Reason for selling, have other business interests that are more important. Address Robert Rhone, Farmington, Minn.

POSITION WANTED By good all-around photographer; know all branches; 17 years experience; married, sober and reliable; prefer inside work and lots of it. For particulars address Louis O. Petersen, Lock Box 106, Charlotte, Iowa.

WANTED Prints and postcards of nude young boys and lads; also nude and costumed juvenile negroes, Indians, grooms, boy scouts, boys in kilts, juvenile acrobats, circus performers, etc. Samples and letters to P. M. Lambach, care Tea Expert Bureau, Batavia, Java, Dutch East Indies (postage 5 cents) via Pacific.

POSITION WANTED By young man, fine physique, willing to pose as a model to artist for the nude figure and in different costumes, Oriental and antique Roman preferred; prefer together with young boys and lads. Speaks several languages. No objection to any pose to be taken; also should like to act for films; photo at disposal. Address Hermes, care "Camera Craft", San Francisco, Cal.

POSITION WANTED By young European speaking six foreign languages, representing well, fine physique, as a general assistant, bookkeeper and receptionist in high class studio; prefers such a one, having a big clientele amongst professional, circus and vaudeville performers, actors, riders, dancers, etc. Write to T. C. L., care "Camera Craft", San Francisco, Cal.

FOR SALE 5x7 Zeiss Protar VIIa lens, Compound shutter, fitted to 4x5 Premo No. 9; also 3 double plateholders, film pack adapter; cost new $125.00, sell for $70.00. Address Fr. K. Lobeck, 3081 16th St., San Francisco, Cal.

FOR SALE Graflex 4x5, new, imported 5x7 Carl Zeiss Tessar IC f-4.5 lens, magazine plateholder, focusing glasses, carrying case, cost $150.00 for $100.00 cash. L. Strashun, 68 Haight St., San Francisco, Cal.

FOR SALE Established studio and photo supply store in Port Townsend, Washington. Practically no competition; own building and grounds, best location, ideal climate. Merchants Bank or First National Bank will advise. Full investigation invited. Address Torka's Studio, Port Townsend, Wash.

WANTED Have a good position open for good reliable man for general studio work. Will pay good salary to right party. This is a nice place to work and a position you would appreciate. For more particulars, write P. A. Newberg, 128 South Clinton St., Iowa City, Iowa.

POSITION WANTED By first class Japanese retoucher; will work by piece. N. M., 1422 Geary St., San Francisco, Cal.

FOR SALE At Grand Forks, N. D., a one-man studio, netting better than $100.00 monthly. Owner now in U. S. service and will make extraordinary price and terms. For quick deal, write direct to L. R. Walker, care N. W. Ordnance Co., Madison, Wis.

FOR SALE Old - established kodak finishing studio, carrying kodaks, films, etc. This place is a money-maker and will pay for itself in four months. Reason, poor health. Will Hall, 29 W. Second St., Reno, Nev.

FOR SALE One No. 10 Cirkut camera, 12 feet, with Turner-Reich lens and tripod, $225.00. One 5x7 Press Graflex $62.50. H. J. Harvey, 204 Camp St., New Orleans, La.

POSITION WANTED By competent woman, experienced in all branches of studio work. Address Retoucher, care Wertz Studios, 11 Pine Ave., Long Beach, Cal.

POSITION WANTED By an efficient young man as press photographer or in mountain resort. Address A. G. B., care "Camera Craft", San Francisco, Cal.

FOR SALE Eastman Folding Kodak, Special 3A Zeiss Tessar lens, series 2B, Compound shutter, plush lined leather carrying case, Bausch & Lomb rapid ray filter; outfit $75.00. P. O. Box 106, Albuquerque, New Mexico.

FOR SALE Conley model XV 5x7 camera, Bausch & Lomb rectilinear lens and shutter, leather case and two double holders, $14.00. L. C. MacDonald, Herkimer St., Pasadena, Cal.

FOR SALE Immediately on account of draft, only studio in town of 6500, located in Central Pennsylvania, doing $3000.00 business yearly; invoices $800.00, but will sell fully equipped for $400.00. Address Kepler's Studio, Renovo, Pa.

SALE OR EXCHANGE 21 jewel Elgin watch in 20-year filled open face case of 6½x8½ portrait lens; for late model Conley or Seneca 5x7 or 6½x8½ view camera with Ilex shutter and good lens or post card film camera. Also new $10.00 professional print trimmer for $5.50. A. Sutherby, Wellsville, N. Y.

WANTED Graflex 2¼x4¼ or 4x5. Will trade new No. 3 Eastman Special 3¼x4¼, f-6.3, speed 1 to 1/300 second. Fine for group scenes and lantern slide work. Purchased February 1, 1918. Mrs. S. C. Matson, 912 N. Shartel St., Oklahoma City, Okla.

POSITION WANTED By a young Chinese man as a printer, retoucher or general assistant; many years experience. Address E. Fong, 743 Grant Ave., San Francisco, Cal.

FOR SALE Studio doing good business, good location on main street, town of 3500 population, rent reasonable. Wish to go out of business. For particulars address Morrison Studio, Montesano, Wash.

FOR SALE Leading studio in a fine town. Doing good business, sickness reason for selling. Excellent chance for good man. Write Quatermos Studio, Marshfield, Or.

SALE OR EXCHANGE 8x10 Holmes, Booth & Hayden portrait lens $25.00; exchange for No. 4 Panoram Kodak and outfit, Ithaca or Winchester Hammerless 12 gauge shotgun. Also Speed Graphic, 5x7 Wollensak, series II, tripod, 4 holders, tank, ray screen, $65.00; condition nearly new. Leslie Harmison, Walkerton, Ind.

SALE OR EXCHANGE Ica Atom, Model A, Vest Pocket, f-5.4 anastigmat lens, Compound shutter, 3 plateholders, film pack adapter and tripod, like new. Take $35.00 or exchange for 3¼x4¼ Ensign reversible Reflex without lens. A. Bayer, 324 K St., Sacramento, Cal.

CAMERA WANTS—Continued.

SALE OR EXCHANGE 3A Kodak and carrying case; 4x5 plate magazine camera, 12 holders; 5x7 Single Achromatic Pictorial lens in iris diaphragm barrel (new); 5x7 film developing machine, extra apron; gold filled Waltham watch, medium size, man's hunting case, perfect time keeper; Moore Safety fountain pen (new). Desire enlarging apparatus for any part or all of above to equal value, or 3¼x4¼ Graflex. Address C. W., care "Camera Craft", San Francisco, Cal.

PHOTO MINIATURES For sale. 95 copies, all different, of most important ones published from 1 to 124. First 32 copies cloth bound. Write for complete list. Address A. S. D., care "Camera Craft", San Francisco, Cal.

FOR SALE One 3B Dallmeyer photo lens, cost $153.00 for $75.00. One 5x7 Darlot lens and Lowe shutter and camera and stand, cost $106.00 for $55.00. W. H. Protzman, Amboy, Wash.

SALE OR RENT Best location in a very good growing town of over 3000 population. County seat high school; north light, steam heat, city water and light; farming country around is the very best. This is a bargain for someone that is looking for a good studio and first class outfit. Write at once to Dahl & Williams, 311 Mair St., Marshall, Minn.

SALE OR RENT My husband has joined the Colors, will therefore rent or sell studio at a sacrifice; only studio in Highmore, South Dakota. Well equipped and doing a nice business. For further particulars address Mrs. H. Lee Jones, Mt. Vernon, So. Dak.

WANTED Good retoucher who can assist under skylight. Position is permanent. Address Gcnelli Studio, 711 Pierce St., Sioux City, Iowa.

WANTED All-around man to take complete charge of studio. Good steady position to right man. Address H. A. Unruh, Avon, So. Dak.

STUDIO FOR SALE Thoroughly equipped, up-to-date studio in a prosperous thriving city in Northern Oregon. Has a well-established profitable business. Full details to interested parties. Address T. P. S., care "Camera Craft", San Francisco, Cal.

BIG KODAK AND STOCK House for sale. Largest stock house and Kodak store in the intermountain country, Eastman agency, is offered for sale on account of ill health of owner. Stock and fixtures will invoice $25,000.00 or better. Net profits 1917 were approximately $5500.00; first three months of 1918 shows nearly $3900 increase in business over 1917. Having a large finishing business and nice professional trade, as well as amateur. Have a nice clean stock of goods and long lease on present quarters on the best block in city of 120,000. A live wire can make this business pay for itself in five years or less. Unless you really mean business, please do not bother me. Will take $25,000.00 to buy this place, which merely covers stock and fixtures, you are not paying a nickel for good will. If you are looking for a good business opportunity ready for you to step in, it will pay you to investigate. Full particulars to responsible parties. Address Intermountain Stock House, care "Camera Craft", San Francisco, Cal.

FOR SALE 5x7 Auto Graflex with film pack adapter, like new, $45.00. 4x5 Auto Graflex, 2 holders, new, $37.50. Want high grade 6½x8½ anastigmat lens. R. Dissing, 324 K St., Sacramento, Cal.

FOR SALE Leading studio, up-to-date and complete, in town of 5000, prosperous and thickly settled community adjoining. Established 20 years, only one other studio. Address H. J. Nance, 240 Main St., Salinas, Cal.

RETOUCHING AND Coloring. Miss B. Ashworth desires the work of a few firms; country orders solicited. Return express paid. 626 Grove St., San Francisco, Cal.

WANTED Graflex or Reflex for 6½x8½ Seneca view camera, 5 plateholders and convertible anastigmat lens, f-6.8. Address H. A. L., care "Camera Craft", San Francisco, Cal.

WANTED Auto Graflex Jr. and Revolving Back Auto Graflex Jr. Will pay cash for these cameras in good condition. State lowest price. Address B. M., care "Camera Craft", San Francisco, Cal.

POSITION WANTED By good printer and darkroom man (42), a carcful and painstaking worker, with some experience in retouching and operating, in a high grade studio. Address Artura, care "Camera Craft", San Francisco, Cal.

WANTED Premo No. 9, long bellows, anastigmat, 4x5 or 3¼x5½. Trade No. 3 Eastman Special, anastigmat f-6.3, brand new. Write what you have. Mrs. S. C. Matson, 912 N. Shartel St., Oklahoma City, Okla.

FOR SALE Studio in prosperous California town with valley population of 10,000. Fully equipped, electricity, gas, water, north light, one other studio, fine climate, good reason for selling. Address W. L. G., care "Camera Craft", San Francisco, Cal.

FOR SALE 5x7 Seneca view camera with Seneca anastigmat lens and Ilex shutter, 4 extra plateholders and folding tripod, in dress suit case; Shoberg portable flash cabinet; No. 10 Ansco camera with plate attachment and 2 extra plateholders; also an Autic shutter and barrel that are fitted to hold the anastigmat lens of the 5x7 camera. Make offer for all or any one item. Ennis F. Fee, Olmstead, N. D.

FOR SALE Studio in University town with a large high school, 2700 population, $100,000.00 payroll, no opposition, rich farming and dairying country; well equipped, will sell with or without lens or cameras. No coupons sold here for 10 years. A snap for a few hundred dollars cash. Address A. B., care "Camera Craft", San Francisco, Cal.

WANTED All-around man. Prefer one who can do retouching. Will pay good salary to right party. For particulars address J. P. Hoffman, care Green-Dragon Studio, Sioux Falls, So. Dak.

FOR SALE 12-inch IC Zeiss Tessar lens, cheap, new condition. Call or write Lasky's, 832 Market St., San Francisco, Cal.

LEARN TO REPAIR CAMERA SHUTTERS!

WRITE FOR PARTICULARS TO

WILLIAM O. HAMMER 1085 14th St., San Francisco

SPOT CASH and highest prices for your camera or lens. Write brief description of what you have. We will make you a cash offer by return mail. If you wish, you may send your goods, subject to our offer, and if our offer is not satisfactory, we will prepay charges on your goods in returning them to you. **Bass Camera Co., 109 N. Dearborn St., Chicago, Ill.**

BARGAINS I am closing out my business, and have about a dozen high grade new and slightly used cameras, equipped with anastigmat lenses, from 2¼x3¼ to 5x7, including a 3¼x11 in. panoram, and several good lenses in high grade shutters, that I will sell for 50 per cent. less than list price. Send for list. R. H. HAYES, ATCHISON, KANSAS.

G. E. BIDDELL & CO. CAMERA DOCTORS 53 FOURTH ST., NEAR MARKET SAN FRANCISCO, - CALIFORNIA

Eastman Kodak Company

ROCHESTER, N. Y., *The Kodak City.*

1918 KODAK CATALOGUE

The Kodak Catalogue, just off the press, will prove as interesting as a best seller to the amateur who likes to keep in touch with new things photographic. There's the new Kodak, for example,—the No. 3A Autographic Kodak Jr.—and there are new Kodak helps and conveniences that the amateur will at least want to know about. It takes sixty-four pages of type and illustration to describe the complete Kodak and Brownie line, as well as the long list of photographic conveniences—and then, of course, we can't do the thing justice.

Get the 1918 Catalogue by all means. You will find it well worth while. But don't be content with reading it. Go to your dealer's and see the models that have aroused your interest. The catalogue is merely the program—the goods, themselves, are the show.

If you ask for it—your dealer will be glad to give it to you.

If you write for it—we will be glad to send it to you.

$3000
IN CASH

OFFERED AS PRIZES IN THE 1918

KODAK ADVERTISING COMPETITION

FOR PICTURES SUITABLE AS ILLUSTRATIONS IN KODAK ADVERTISING

A Particular Feature is a Special Class for Amateurs only with cash awards totaling

$1000

Write for Circular giving Complete Details

EASTMAN KODAK CO.
ROCHESTER, N. Y.

Contest closes Nov. 1, 1918

Eastman Kodak Company

ROCHESTER, N. Y., *The Kodak City.*

AUTOGRAPHIC BACKS

Because autographic photography can be employed by the amateur with such particular advantage it would be strange indeed if he did not avail himself of its opportunities. The feature which permits the date and title of every negative in writing at the time of exposure obviously allows as well a memorandum of the conditions under which each picture is made. Light conditions, aperture and time can be combined in a brief memorandum that will tell the story of success or failure. Each negative containing its autographic record becomes an object lesson. The amateur will know what to do another time under similar conditions—what time to give—what aperture to use—and what is even more important, he will know what not to do.

And to reap the benefits of better picture-making with the autographic record as a guide, it may not be necessary to purchase a new Kodak. Any Kodak of the following named, plus an autographic back becomes an Autographic Kodak. Extra backs are supplied and may be added to the Kodak not originally equipped with this improvement.

Autographic backs will be supplied for the Kodaks listed, at the following prices:

No. 1 Kodak Junior	$2.50
No. 1A Kodak Junior	3.00
No. 1A Folding Pocket Kodak, Rapid Rectilinear Type	3.50
No. 3 Folding Pocket Kodak	3.50
No. 3A Folding Pocket Kodak	3.75
No. 4 Folding Pocket Kodak	4.00
No. 4A Folding Kodak	4.50
No. 1A Special Kodak	4.00
No. 3 Special Kodak	4.00
No. 3A Special Kodak	4.25

TESTED EK CHEMICALS

Eastman Tested Chemicals

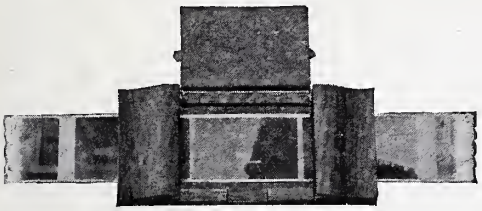
Look for this seal *ana find it.* It means that the chemical or chemical preparation so branded has completely satisfied experts who are paid to find flaws.

EASTMAN KODAK CO.
ROCHESTER, N. Y.

At your dealer's.

Eastman Kodak Company

ROCHESTER, N. Y., *The Kodak City.*



KODAK SERIAL PRINTING FRAME NO. 2

In printing from separate vest pocket negatives, their small size sometimes makes them a little hard to properly adjust in the printing frame. The Kodak Serial Printing Frame solves this difficulty in a simple manner by enabling the amateur to print from the film strip.

Instead of cutting the negatives after development, the film is left in a continuous strip which slides smoothly through the Serial Frame from exposure to exposure. Film and paper are held in rigid contact during printing by a tension spring.

The price of the Kodak Serial Printing Frame No. 2 is fifty cents.

Color your vacation prints with

VELOX TRANSPARENT WATER COLOR STAMPS

Simple to use, no artistic ability necessary—and you can bring the picture nearer to nature with every stroke of the brush.

THE PRICE

Book of Velox Water Color Stamps (12 colors), - - - - - -	$ .25
Complete Velox Water Color Outfit, including book of color stamps, three brushes and palette, - - - -	.75

EASTMAN KODAK COMPANY
ROCHESTER, N. Y.

At your dealer's.

THE LENS IN YOUR KODAK

Whatever type of lens may be in your Kodak you may have complete confidence in it—you may be sure that it is the best of its type that can be secured. Whether it be meniscus achromatic, rapid rectilinear or anastigmat, it is a lens particularly adapted to the camera to which it is fitted and a lens that will do precisely what a lens of its type should do. The manufacturer makes sure of this by rigid tests before the lens leaves the factory.

It is a lens worth taking care of—is your Kodak lens. Keep it clean of dust specks with a camel's hair brush or tuft of soft fabric and give it, when possible, the added protection which a carrying case affords.

When you take a Kodak with you provide yourself with a

CARRYING CASE

Its convenience will appeal to you at once and the practical protection afforded your camera from the wear and tear of travel is well worth while.

There's more than a pound of prevention in the carrying case and the cost is small.

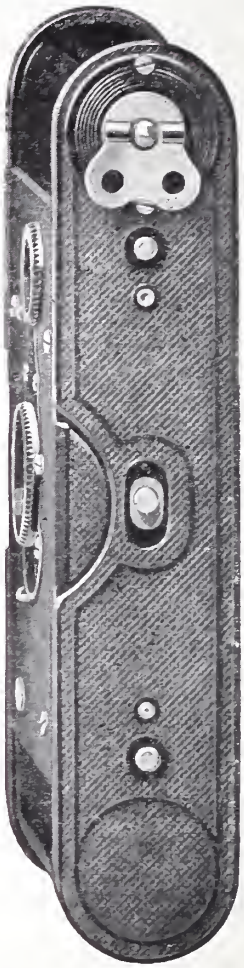
EASTMAN KODAK COMPANY
ROCHESTER, N. Y.

At your dealer's.

Vest Pocket Autographic Kodak

Price, $7.50

Here is its actual size—it's small enough to *wear* ⟶

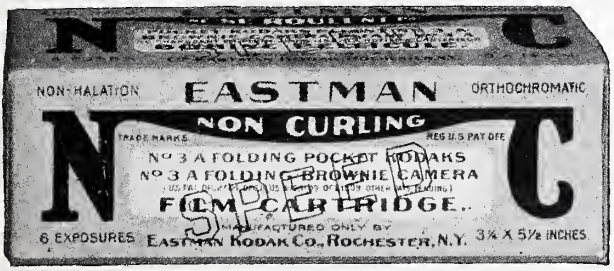


And here is the actual size of the picture it makes—big enough and good enough to tell the whole story well.

EASTMAN KODAK COMPANY,
ROCHESTER, N. Y.

At your dealer's,

EVEN a Kodak cannot do its best work unless it is loaded with the film intended for it—the film that is absolutely dependable—Eastman film. All Eastman film is speed film.



Eastman Film

If you have a camera in which the autographic feature is not incorporated, specify Eastman Film. If it isn't Eastman, it isn't Kodak film.

Eastman Autographic Film

If you have an Autographic Kodak or an Autographic Brownie, specify Eastman Autographic Film. If it isn't Eastman, it isn't Autographic.

EASTMAN KODAK COMPANY,
ROCHESTER, N. Y.

Over the counter all over the world.

Kodak

VELVET GREEN

V G

Paper

The green of landscape and water is realistically reproduced in prints on this paper without re-developing.

It works much like Velox—in other words it is a very simple paper to manipulate.

Kodak Self Timer

You can take the picture and be in it as well—the Kodak Self Timer releases the Kodak shutter after allowing you plenty of time to get in the group.

Price, $1.25

EASTMAN KODAK COMPANY,
ROCHESTER, N. Y.

At your dealer's.

Kodak
Serial Printing Frame No. 2

for use with Vest Pocket Negatives

By means of this new printing frame, prints are made direct from the film strip instead of from the small detached negatives which are often clumsy to adjust.

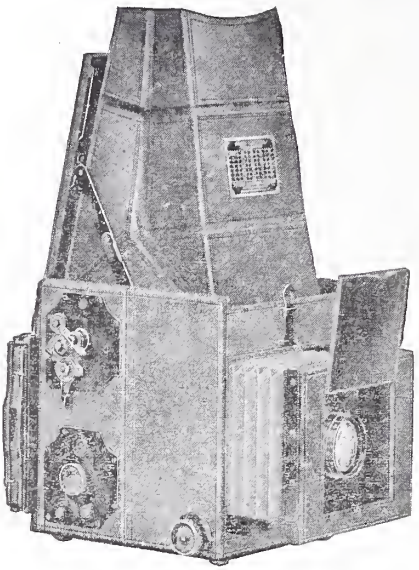
The film strip slides easily through the frame from exposure to exposure.

THE PRICE

Kodak Serial Printing Frame No. 2 for V. P. K. negatives only - - - - - - - - - $0.50

EASTMAN KODAK COMPANY,
ROCHESTER, N. Y.

At your dealer's.



The Auto Graflex

A camera that lets you see every picture before it is taken, assuring a certainty in the result that is impossible with any other type of hand camera.

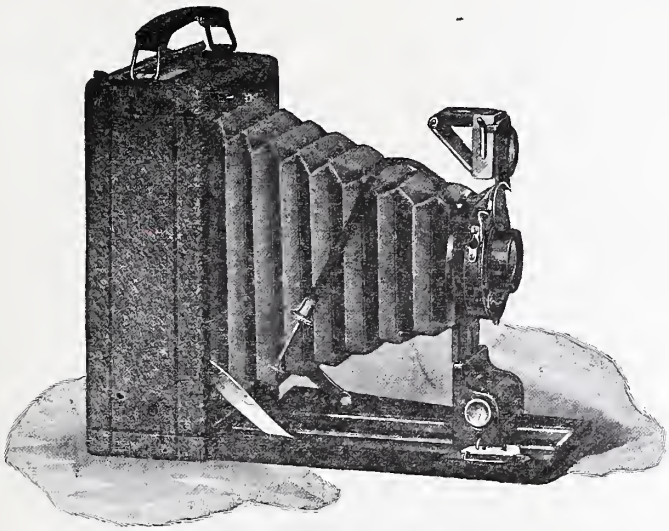
The Focusing Screen shows the subject in full picture size, right side up, as you adjust focus and composition, up to the instant of exposure.

Landscapes, marine views, street scenes, portraiture, or pictures of rapidly moving objects, are equally provided for with the great range of shutter speed, from time exposures to 1/1000 of a second, and the exposure may be made upon Graflex Roll Film, Film Packs or Plates.

Ask for the 64-page Graflex Catalogue free at your dealer's or by mail.

Folmer & Schwing Department

EASTMAN KODAK COMPANY ROCHESTER, N. Y.



Premoette Senior

An exceptionally light and compact camera for the size of picture it makes.

The Premoette Senior is made in three sizes, 2½ x 4¼, 3¼ x 4¼, 3¼ x 5½, and is equipped with Rapid Rectilinear or Kodak Anastigmat Lens *f*.7.7, mounted in the Kodak Ball Bearing Shutter.

The camera may be quickly loaded and unloaded in daylight with the Premo Film Pack, containing twelve exposures of Eastman N. C. Film.

Attractively finished and exceptionally simple in operation, the Premoette Senior will meet the requirements of anyone desiring a reliable camera at moderate cost.

Ask for the 48 page Premo Catalogue,
free at your dealer's or by mail

ROCHESTER OPTICAL DEPARTMENT

EASTMAN KODAK COMPANY ROCHESTER, N. Y.

A Word to Photographic America

AT this critical period in our nation's history we must each discover what our country requires of us; then do our particular bit, gladly, to help win the war as speedily as possible.

It has not been difficult for us to discover our bit, for lenses and optical instruments are the eyes of the modern army and navy, and we are bending all of our energies to the endeavor to meet those vital requirements.

We are confident that you, too, are adjusting yourselves to prevailing conditions, cheerfully and optimistically, for pessimism never promoted any cause. Photographic enthusiasts can find particular satisfaction in the significant service their chosen art is able to render during the present crisis.

May we all work together, then, for the best interests of humanity — first, to win the war; second, to maintain the momentum of all worthy activities in the nation, looking steadily to the day when the war shall cease.

Bausch & Lomb Optical Co.

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Leading American Makers of Photographic and Ophthalmic Lenses, Projection Lanterns (Balopticons), Microscopes, Binoculars and other High-Grade Optical Products.

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You now have an opportunity to purchase a limited quantity of the well-known, dependable and popular

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The lot comprises 600,000 sheets No. 6 single weight studio contract CYKO, exact size $5\frac{1}{8}$ x $7\frac{1}{8}$ inches; and 30,000 sheets No. 6 single weight studio enlarging contrast CYKO, exact size $11\frac{3}{4}$ x $15\frac{3}{4}$ inches. All of this paper was fresh coated and packed specially for export, 100 sheets in a box, all boxes packed in sealed, tin-lined cases, and delivered to the representatives of the Russian Government in New York City on November 12th, 1917.

The manufacturer's guarantee does not expire until August 12th, 1918, and in addition we give our personal guarantee for an additional six months.

We restrict this sale to cash with order only, either currency, money order or certified check—no C. O. D. Orders will be filled as received.

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A GOOD WIDE ANGLE LENS.
THE VELOSTIGMAT
— SERIES III F:9·5
IS AN IDEAL
ANASTIGMATIC WIDE ANGLE OBJECTIVE
Let us tell you more about it.
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sharpens the picture and shortens the exposure. To be without one is a handicap, a limitation the photographer cannot overcome, often meaning the difference between success and failure.

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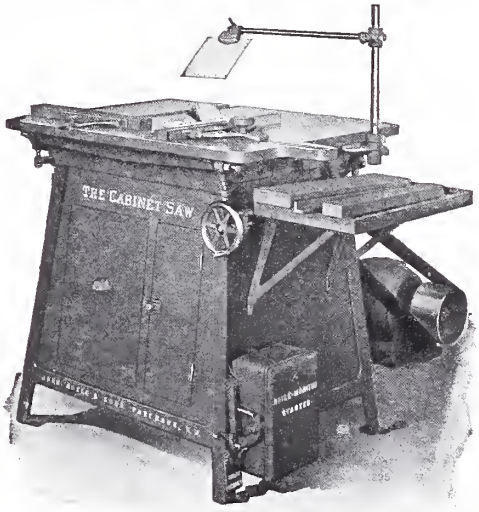

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It has the VIGOR and ENDURANCE, and the certainty of resulting tone which no metol substitute has ever approached. Because it is METOL.

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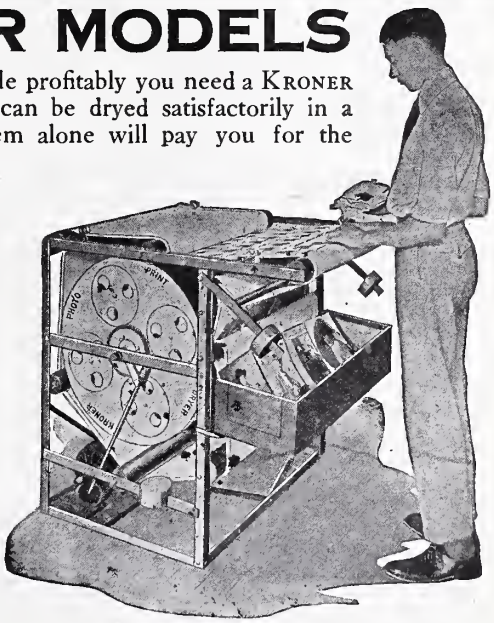

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Is an ideal coating for trays, tanks, sinks and fixing boxes of all kinds. For painting darkroom walls, shelves and floors; water-proofing home-made trays, etc.

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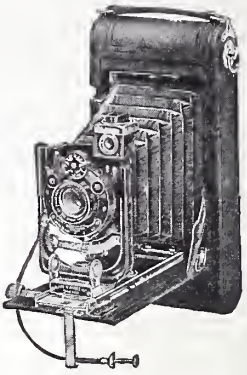

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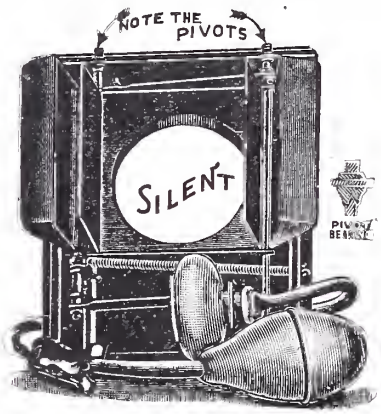

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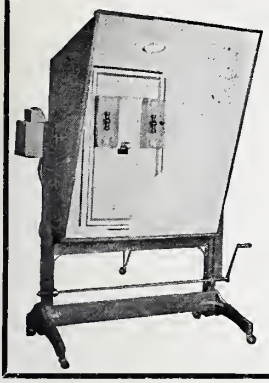

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of every portrait studio, is an absolutely ***dependable, controllable, economical and instantaneous*** artificial light for producing results which cannot be distinguished from work made under a skylight, with ideal conditions.

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IS THE *ONLY* SUCH LIGHT EVER PRODUCED.

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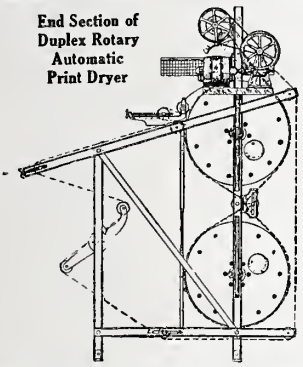

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PRINT DRYER

This machine is covered by patents and is therefore the only two cylinder dryer on the market. It is absolutely right in mechanical design and construction.

SPEEDS UP YOUR WORK
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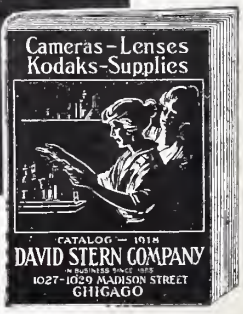

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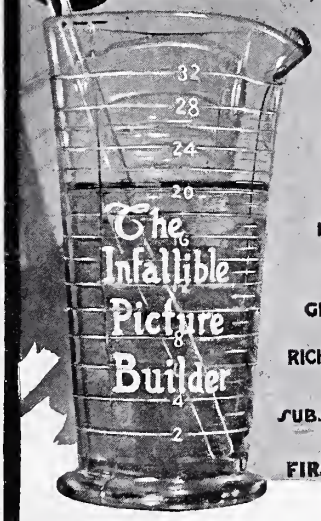

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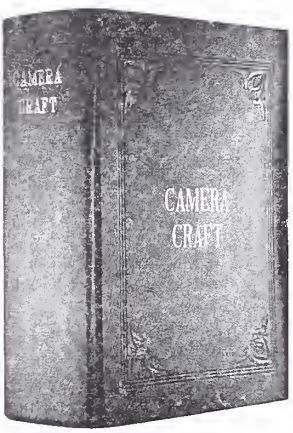
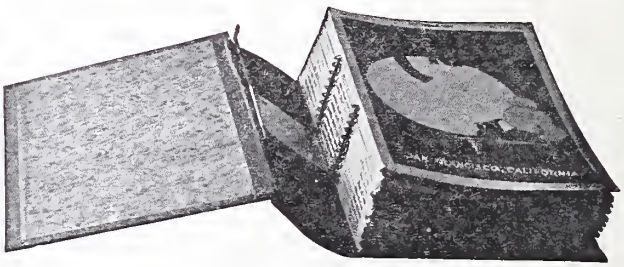


For a long time we have been looking for a really practical binder, one that we could recommend to our readers. We believe we have found it in the **BIG BEN** shown below. Put on the



market only a few months ago it has already been adopted by such leading publications as Cosmopolitan, Ladies' Home Journal, Good Housekeeping and hundreds of others. This binder is finished in book cloth with **Camera Craft** stamped in gold on front cover and back. It is equipped with a patented device for binding twelve copies of Camera Craft together in a single volume, having the appearance of a regular bound book. It is strong in construction and so simple in operation that the filing or extraction of one or more magazines requires but a few seconds. No punching of holes is necessary—just a slit between the pages with a pen knife, the insertion of a metal clip, and the magazine is ready to be dropped into place over the binding rods, which are swung back and, with a slight turn of the wrist, securely locked to the solid wood back. The back is not flexible and there is no chance for the magazine to work loose or uneven. We supply them at **$1.00 each, postpaid.**

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If it isn't an Eastman, it isn't a Kodak.

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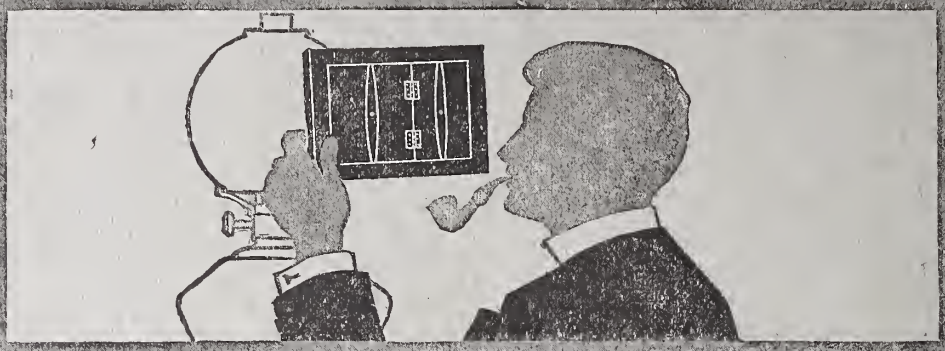

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